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U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF PLANT INDUSTRY—BULLETIN NO. 106.

B. T. GALLOWAY, *Chief of Bureau.*

SEEDS AND PLANTS IMPORTED

DURING THE PERIOD FROM DECEMBER, 1905, TO JULY, 1906.

INVENTORY No. 12; Nos. 16797 to 19057.

ISSUED DECEMBER 20, 1907.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1907.

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SEED AND PLANT INTRODUCTION.

SCIENTIFIC STAFF.

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LETTER OF TRANSMITTAL.

U. S. Department of Agriculture,
Bureau of Plant Industry,
Office of the Chief,
Washington, D. C., April 13, 1907.

Sir: I have the honor to transmit herewith, and to recommend for publication as Bulletin No. 106 of the series of this Bureau, the accompanying manuscript, entitled "Seeds and Plants Imported During the Period from December, 1905, to July, 1906."

This manuscript has been submitted by the Agricultural Explorer in Charge of Seed and Plant Introduction with a view to publication.

Respectfully,

B. T. Galloway,
Chief of Bureau.

Hon. James Wilson,
Secretary of Agriculture.

B. P. I.—238.

SEEDS AND PLANTS IMPORTED DURING THE PERIOD FROM DECEMBER, 1905, TO JULY, 1906.

INTRODUCTORY STATEMENT.

This twelfth inventory of seeds and plants imported, prepared under the immediate supervision of Mr. Walter Fischer, represents the accessions of this Office between the dates of December 15, 1905, and July 27, 1906, a period of about seven months. It contains 2,260 items, which is as large a number as was represented by the collections of a whole year when this Office was organized in 1898, notwithstanding the fact that the present lists are the result of a more rigid selection than at the outset.

To the outsider it may seem strange that larger numbers of plants and seeds are not accumulated in so long a period. To these it may be said that it is not the object of the work of plant introduction to collect as many species and varieties of plants which may have some economic use in this country as is possible, but rather to carefully collect only such forms as can be put to a really practical use by American cultivators. This Office is informed of hosts of useful plants now growing in different parts of the world which are not yet on the program of practical plant introduction. At a small expense thousands of these useful plants could be gathered and placed in collections, but the cost of maintaining any one of them would in a few years far exceed the cost of procuring it anew for the definite experiments of the experts of the country who may want it for breeding purposes, as a stock on which to graft, or as a possible new crop for hitherto unused lands.

The principle, then, of systematic plant introduction, as it is carried on by this Office, is to get the seeds and plants that are wanted for the solution of definite problems in the establishment of new plant industries; import them in sufficient quantities for large and conclusive experiments, and place them as soon as possible in the hands of experts who will carry out at once such experiments.

Among the collections of new introductions included in this inventory there are some that are worthy of special mention here. Principal among these are the collections of our agricultural explorer

Mr. Frank N. Meyer, who was sent out to northern China in the summer of 1905 and who has been exploring the remarkable plant regions of the mountains north and west of Peking. His finds, coming as they do from a region with as severe a winter as that of the Middle States, will surely be, we believe, valuable to plant growers over a wide range of territory. In fact, the preliminary trials that have been made with these North Chinese plants in this country show that as a rule they have a degree of hardiness and resistance to disease which their close relatives from Japan, now so abundantly represented in our gardens and fields, do not possess. Mr. Meyer's explorations have been made into different places, difficult and sometimes dangerous of access, and at no little sacrifice of personal comfort and risk to his health and safety. The collections cover a wide range of things for which there is a demand already created by breeding, grafting, and other experiments which have been carried on in this country during the past decade. The material sent in is now in process of propagation, and as soon as ready will be sent out to experimenters.

Other collections worthy of notice are a number of new sorghums from tropical Africa, the home of the sorghum plant; a collection of the interesting new wet-land root crop, the yautia, from Porto Rico; some interesting new forms of potato from Bolivia; leguminous plants for breeding as fodder producers, collected from various parts of the world; forage and fodder grasses in large numbers from many different foreign countries; the Queensland nut Macadamia, which is a possibility for California; the South China soap tree, which has recently come into some prominence in Algeria as a source of saponin, a commercial product used in the manufacture of soaps; a collection of hardy grass and forage plant seed from the Austrian Alpine garden at an altitude of 5,700 feet; three new pistache species for breeding and for stocks on which to graft the ordinary edible variety of this nut, from the borders of Afghanistan, North China, and northern Persia; a collection of West Indian yams, promising possibilities as a change from the monotony of the Irish potato; a number of new Mexican apricots for the fruit-growing areas of Texas and the Gulf States; and a very important collection of the edible-fruited and fodder cacti, made by the cactus expert of the Department, Dr. David Griffiths, who has made experimental plantings of these most interesting plants in the dry regions of the Southwest.

DAVID FAIRCHILD,
Agricultural Explorer in Charge

OFFICE OF SEED AND PLANT INTRODUCTION,
Washington, D. C., April 12, 1907.

INVENTORY.

16797 to 16806.

From Budapest. Presented by Dr. A. de Degen, director of the Royal Hungarian Seed Control. Received December 15, 1905.

Seeds of native Hungarian grasses, as follows:

16797. Bromus vernalis.
16798. Bromus pannonicus.
16799. Avena decora.
16800. Alopecurus brachystachyus.
16801. Festuca carpathica.
16802. Festuca elatior.
16803. Piptatherum virescens.
16804. Glyceria nemoralis.
16805. Poa hybrida.
16806. Poa chaixii.

16807. Oryza sativa. Upland rice.

From Pretoria, Transvaal, South Africa. Presented by Prof. J. Burtt Davy, agrostologist and botanist of the Department of Agriculture. Received December 18, 1905.

"Seed grown in a subtropical valley near Sucre, Bolivia, at an altitude of about 10,000 feet. It is treated as a dry-land crop, like maize." (*Davy.*)

16808. Rubus sp. Red raspberry.

From Baguio, Benguet Province, P. I. Presented by Mr. W. S. Lyon, Bureau of Agriculture, Manila, P. I. Received December 11, 1905.

16809. Panicum molle. Para grass.

From Georgetown, British Guiana. Presented by Mr. A. W. Bartlett, government botanist. Received December 19, 1905.

"A valuable grass for pasture and forage in the Tropics. This grass grows luxuriantly in damp meadows and is readily eaten by horses, cattle, and sheep." (*Bartlett.*)

16810. Xanthosoma sp. Yautia.

From Ancon, Panama. Presented by Mr. George F. Halsey. Received December 19, 1906.

"Tubers of a plant locally called *Oto*, *Coco*, or *Comorata*. It is very hardy and grows best in a well loosened, moist soil, and the tubers can be cut into many sections and planted like potatoes." (*Halsey.*)

16811. Vicia americana. American vetch.

From Fergus Falls, Minn. Presented by Mr. C. J. Wright. Received December 20, 1905.

This is is a native vetch which grows wild in woods and copses in the northeastern United States. It is much relished by stock and might perhaps be cultivated to some extent with profit.

16812. VIGNA UNGUICULATA. **Cowpea.**

From West Branch, Mich. Received through Ogeman Grain and Seed Company, December 20, 1905.

16813 to 16820.

From Office of Drug and Medicinal Plant Investigations. Received through Dr. R. H. True, December 9, 1905.

Seeds of medicinal plants, as follows:

16813. DIGITALIS PURPUREA. **Purple foxglove.**

"The common purple foxglove cultivated in some parts of Europe for its leaves, which are a valuable remedy. The leaves are officinal when picked during the time of flowering. This is one of the most important remedies in certain kinds of heart trouble." (*True.*)

16814. LOBELIA INFLATA. **Indian tobacco.**

"A native weed in open situations of the eastern United States. Both seed and herb collected for drug purposes. Has an emetic, expectorant, and antispasmodic action. Is a strong poison, capable of producing fatal results." (*True.*)

16815. ATROPA BELLADONNA. **Belladonna.**

"Cultivated in several parts of Europe for the leaves and roots, which form one of the chief sources of atropine. The attractive looking fruits also contain atropine and are not rarely eaten by children with fatal results. Is sparingly cultivated in the United States for drug purposes." (*True.*)

16816. NEPETA CATARIA. **Catnip.**

"A common weed of the United States, collected in its wild condition for drug purposes. It is valued as a domestic remedy for its carminative, stimulant, and tonic properties, due to the volatile oil present in the herb." (*True.*)

16817. CAPSICUM FASTIGIATUM. **Japanese chillies.**

"Cultivated in the Orient for the small bright red fruits, having a very pungent taste. Used in medicine for the digestant and rubifacient properties, and also for making the ground cayenne peppers of the spice market." (*True.*)

16818. CAPSICUM FASTIGIATUM. **Small capsicum.**

16819. PAPAVER SOMNIFERUM. **Asiatic poppy.**

"A blue-seeded variety cultivated in the Orient as a source of opium, and in parts of Europe for the seeds, from which an agreeable bland oil is expressed. Seeds from plants grown at Burlington, Vt." (*True.*)

16820. PAPAVER SOMNIFERUM. **Asiatic poppy.**

A white-seeded variety to which the same remarks apply as to the preceding.

16821 to 16852.

From the Office of Farm Management Investigations. Received December 21, 1905.

A collection of grass seeds, as follows:

16821. BROMUS RUBENS.

From Caliente, Kern County, Cal., July 2, 1904. (Agrost. 2132.)

16822. BROMUS sp.

From Arizona, 1904. (Agrost. 2134.)

16823. BROMUS INERMIS. **Smooth brome-grass.**

From Argentina. Peluff's collection, 1904. (Agrost. 2440.)

16824. BROMUS INERMIS. **Smooth brome-grass.**

From Arezzo, Italy, 1904. (Agrost. 2351.)

16821 to 16852—Continued.

16825. BROMUS INERMIS. **Smooth brome-grass.**

From Austria-Hungary. Peluff's collection, 1904. (Agrost. 2449.)

16826. BROMUS PRATENSIS. **Meadow brome-grass.**

From Padua, Italy, 1904. (Agrost. 2373.)

16827. BROMUS UNIOLOIDES. **Rescue grass.**

(Agrost. 2448.)

16828. AGROSTIS STOLONIFERA. **Creeping bent-grass.**

(Agrost. 2323.)

16829. AGROSTIS ALBA. **Redtop.**

(Agrost. 2443.)

16830. AGROSTIS ALBA. **Redtop.**

From Milan, Italy, 1904. (Agrost. 2340.)

16831. AGROSTIS ALBA. **Redtop.**

From Naples, Italy, 1904. (Agrost. 2341.)

16832. AGROSTIS ALBA. **Redtop.**

From Rome, Italy, 1904. (Agrost. 2370.)

16833. PANICULARIA AMERICANA.

From J. M. Thorburn & Co., New York, N. Y.

16834. POA NEMORALIS. **Wood meadow grass.**

From Italy, 1904. (Agrost. 2360.)

16835. POA PRATENSIS. **Kentucky bluegrass.**

From Padua, Italy, 1904. (Agrost. 2350.)

16836. POA PRATENSIS. **Kentucky bluegrass.**

From Treviso, Italy, 1904. (Agrost. 2356.)

16837. LOLIUM PERENNE. **Perennial rye-grass.**

(Agrost. 2319.)

16838. LOLIUM PERENNE. **Perennial rye-grass.**

(Agrost. 2329.)

16839. LOLIUM PERENNE. **Perennial rye-grass.**

(Agrost. 2330.)

16840. LOLIUM PERENNE. **Perennial rye-grass.**

From Turin, Italy, 1904. (Agrost. 2344.)

16841. LOLIUM PERENNE. **Perennial rye-grass.**

From Milan, Italy, 1904. (Agrost. 2362.)

16842. LOLIUM PERENNE. **Perennial rye-grass.**

From Naples, Italy, 1904. (Agrost. 2365.)

16843. LOLIUM PERENNE. **Perennial rye-grass.**

From Florence, Italy, 1904. (Agrost. 2369.)

16844. LOLIUM PERENNE. **Perennial rye-grass.**

From Genoa, Italy, 1904. (Agrost. 2375.)

16845. LOLIUM ITALICUM. **Italian rye-grass.**

From Mantova, Italy, 1904. (Agrost. 2342.)

16846. LOLIUM ITALICUM. **Italian rye-grass.**

From Italy, 1904. Agrost. 2367.)

16821 to 16852—Continued.

16847. LOLIUM ITALICUM. **Italian rye-grass.**

From Conegliano, Italy, 1904. (Agrost. 2371.)

16848. FESTUCA PRATENSIS. **Meadow fescue.**

From Argentina. Peluff's collection, 1904. (Agrost. 2474.)

16849. ALOPECURUS PRATENSIS. **Meadow foxtail.**

(Agrost. 2324.)

16850. DACTYLIS GLOMERATA. **Orchard grass.**

From Padua, Italy, 1904. (Agrost. 2377.)

16851. PHLEUM PRATENSE. **Timothy.**

From Rome, Italy, 1904. (Agrost. 2366.)

16852. HEDYSARUM CORONARIUM. **Sulla.**

From Naples, Italy, 1904. (Agrost. 2397.)

16853. OXALIS ORTGIESI. **Oxalis.**

From Washington, D. C. Received through the National Botanic Garden, December 21, 1905.

16854 to 16861. SORGHUM VULGARE. **Sorghum.**

From Berlin, Germany. Presented by the Berlin Botanical Museum. Received December 20, 1905.

Sorghum varieties from tropical Africa, as follows:

16854. *Ovulifer.*
16855. *Usaramensis.*
16856. *Roxburghii.*
16857. *Densissimus.*
16858. *Ovulifer.*
16859. *Jucundus.*
16860. *Baumannii.*
16861. *Baumannii.*

16862 to 16865.

From College Park, Md. Received through Mr. H. A. Miller, Agricultural Experiment Station, December 20, 1905.

16862. HORDEUM VULGARE. **Barley.**

Tennessee Winter. (C. I. No. 257.)

16863. AVENA SATIVA. **Oat.**

Sixty-Day. (C. I. No. 165.)

16864. AVENA SATIVA. **Oat.**

Snoma. (C. I. No. 274.)

16865. AVENA SATIVA. **Oat.**

Burt. (C. I. No. 293.)

16866. DIOSCOREA TRIFIDA. **Yampee yam.**

From the Canal Zone. Presented by Mr. George F. Halsey. Received December 27, 1905.

"Roots of a variety apparently distinct from the Jamaica and Porto Rico varieties. This variety should be cultivated in hills and is said to be very productive. The roots are yellowish inside." (*Barrett.*)

16867. SYNCARPIA LAURIFOLIA. **Turpentine tree.**

From Melbourne, Australia. Presented by Prof. W. R. Guilfoyle, director of the Botanic Gardens. Received December 29, 1905.

16867—Continued.

"A tree 100 to 150 feet high with diameter 4 to 5 feet; native of the tropical coast regions of New South Wales and Queensland. Valuable timber tree, especially for posts and underground situations; also for piles, as the resinous matter contained in the wood makes it resistant to damp, the attacks of white ants, and the Teredo. Entirely unprotected piles exposed to the waves for twelve years were found absolutely free from decay and the attacks of the Teredo. The wood is also difficult and slow to burn, a useful property in building lumber. An oleo-resin, in degree and character something between Venice turpentine and Canada balsam, contained in the wood is best collected by felling the tree, when it exudes between the bark and sapwood in small drops, which may be scraped off and the resin collected in a pure state." (*J. H. Maiden.*)

16868. CEROPEGIA FUSCA.

From Grand Canary, Canary Islands. Presented by Mr. Alaricus Delmard. Received December 21, 1905.

16869. CYNARA SCOLYMUS. **Artichoke.**

From Paris, France. Received through Vilmorin-Andrieux & Co., December 29, 1905.

Seed of the *Globe* or *Paris* artichoke.

16870. DIOSPYROS sp. **Sapote negro.**

From Uruapan, Michoacan, Mexico. Presented by Mr. C. G. Pringle. Received December 22, 1905.

16871. PERSEA GRATISSIMA. **Avocado.**

From Miami, Fla. Presented by Mr. S. B. Bliss. Received December 18, 1905.

Trapp.

16872. CITRUS TRIFOLIATA × AURANTIUM. **Citrange.**

From the Plant Breeding Laboratory. Received December 22, 1905.

Trees of the *Morton* citrange, a hybrid between the trifoliate and the sweet orange, developed by Dr. H. J. Webber. (P. B. L. No. 771.)

16873 to 16899.

From Brunswick, Germany. Presented by the Ducal Botanic Gardens. Received December 21, 1905.

A collection of seeds, mostly grass and leguminous forage plants, as follows:

16873. MEDICAGO APICULATA.
16874. MEDICAGO ECHINUS.
16875. MEDICAGO MUREX.
16876. MEDICAGO ORBICULARIS.
16877. MEDICAGO SCUTELLATA.
16878. MEDICAGO TEREBELLUM.
16879. MEDICAGO TRIBULOIDES.
16880. ONOBRYCHIS CHRISTA-GALLI.
16881. ONOBRYCHIS CAPUT-GALLI.
16882. LATHYRUS OCHRUS.
16883. PISUM ELATIUS.
16884. PISUM ARVENSE.
16885. PISUM SATIVUM.
16886. SCORPIURUS SULCATA.
16887. SCORPIURUS MURICATA.
16888. SCORPIURUS VERMICULATA.
16889. SCORPIURUS SUBVILLOSA.
16890. ERODIUM GRUINUM.
16891. ERODIUM MALACHOIDES.
16892. AVENA BREVIS.
16893. AVENA SATIVA DIFFUSA.
16894. AVENA SATIVA DIFFUSA.
16895. AGROPYRON PUNGENS.
16896. BROMUS BRACHYSTACHYS.
16897. BROMUS STERILIS.
16898. HORDEUM AEGICERAS.
16899. HORDEUM ZEOCRITON.

16900. CEPHALARIA TATARICA.

From Stockholm, Sweden. Presented by the Albano Botanic Gardens. Received December 21, 1905.

16901 to 16908.

From Saharanpur, India. Presented by Prof. H. M. Leake, economic botanist, Government Botanic Gardens. Received December 21, 1905.

Grass seeds, as follows:

16901. SYNTHERISMA SANGUINALIS. **Finger grass.**

16902. PANICUM TRYPHERON. **Guinea grass.**

16903. PASPALUM DILATATUM. **Large water grass.**

16904. CHAETOCHLOA GLAUCA. **Yellow foxtail.**

16905. EUCHLAENA MEXICANA. **Teosinte.**

16906. ELEUSINE AEGYPTIACA.

16907. ANDROPOGON PERTUSUS.

16908. ANDROPOGON HALEPENSIS. **Johnson grass.**

16909 to 16927.

From near Peking, China. Received through Mr. Frank N. Meyer, December 26, 1905.

Cuttings of various fruit trees, grapevines, and ornamentals, as follows:

16909. ULMUS sp. **Elm.**

From Nankou. "(No. 31.) A broad-leaved elm suitable for small gardens and parks." (*Meyer.*)

16910. DIOSPYROS KAKI. **Persimmon.**

From Ming Tombs Valley. "(No. 97.) A small, seedless persimmon, with bright, orange-red fruits attaining 2 inches in diameter; later in ripening than the large ones (S. P. I. No. 16912) and not so good. The trees, however, grow to a larger size, and with their leaves dropped off and loaded with orange-colored fruits are very ornamental. Before falling the leaves also assume beautiful colors." (*Meyer.*)

16911. PYRUS SINENSIS. **Pear.**

From Tcha-ching. "(No. 120.) A fine, white pear with melting flesh; is one of China's finest pears. Comes in late, but, being a poor keeper, disappears very early from the markets." (*Meyer.*) (Same as S. P. I. No. 16916.)

16912. DIOSPYROS KAKI. **Persimmon.**

From Ming Tombs Valley. "(No. 104.) A most valuable fruit. The bright, orange-colored fruits attain a diameter of 4½ inches and are perfectly seedless. Bears shipping extremely well if picked when not quite ripe. Can be kept frozen hard if picked too ripe, and if care is taken can be shipped long distances. Finally, their taste is delicious and they would be highly esteemed in America as a table fruit." (*Meyer.*) (See also S. P. I. No. 16921.)

16913. DIOSPYROS KAKI. **Persimmon.**

From Ming Tombs. "(No. 33.) A larger variety of seedless persimmon than is generally seen, but the fact that they grew on a young tree may account for this. It ripens, however, a fortnight later than those sent in under Nos. 16912 and 16921; otherwise the same description applies to it." (*Meyer.*)

16914. CATALPA BUNGEI. **Catalpa.**

From Peking. "(No. 13.) The real *Catalpa bungei*. A fine tree, said to be covered in spring with pink-white flowers; a favorite tree in old temple yards. This one comes from the Yellow Temple, a short distance north of Peking." (*Meyer.*)

16909 to 16927—Continued.

16915. Populus sp. **Poplar.**

From Hwai-jou. "(No. 15.) This poplar seems to be a favorite tree for temple yards; it grows to a very large size, has a straight trunk with branches trimmed high from the ground and with large, dark green leaves. It will be much appreciated as an avenue or park tree." (*Meyer.*)

16916. Pyrus sinensis. **Pear.**

From Tcha-ching. (No. 109.) For description see No. 16911.

16917. Prunus armeniaca. **Apricot.**

From Shan-hai-kwan. "(Nos. 28 and 29.) A wild apricot with small fruits; apparently grows wild in a few cañons." (*Meyer.*)

16918. Prunus sp. **Cherry.**

From Tang-shan. "(No. 93.) Apparently a cherry which grows in bush-like form, much resembling a red currant bush. According to the Chinese, the fruits are small but sweet, ripening in early June." (*Meyer.*)

16919. Amygdalus persica. **Peach.**

From Shan-hai-kwan. "(No. 32.) A wild peach found near an old monastery, but occurring in many different places—probably escaped from cultivation." (*Meyer.*)

16920. Morus alba. **Mulberry.**

From Ming Tombs. "(No. 92.) A form with very deeply cut leaves, which appear to be decidedly different from the common type." (*Meyer.*)

16921. Diospyros kaki. **Persimmon.**

From Ming Tombs Valley. "(Nos. 104 and 105.) These trees are grafted upon wild stock and are planted 20 to 30 feet apart. Being slow growers, peaches are planted between the young trees and afterwards taken out when the persimmons need the space. They seem to love a somewhat sheltered position in the foothills of the mountains in a soil made of decomposed rock." (*Meyer.*)

16922. Fraxinus sp. **Ash.**

From Shan-hai-kwan. "(No. 11.) A decidedly ornamental shade tree; grows in dry situations." (*Meyer.*)

16923. Morus alba. **Mulberry.**

From Ming Tombs. "(No. 91.) Another form with deeply laciniated leaves." (*Meyer.*)

16924. Pyrus sinensis. **Pear.**

From Tcha-ching. "(No. 119.) An attractive, medium-sized white pear with a long stem and nonmelting flesh; much relished by the Chinese." (*Meyer.*)

16925. Populus sp. **Poplar.**

From Kaulitang. "(No. 38.) This poplar thrives in sandy soil and is planted largely on sandy wastes where no other tree would flourish. The Chinese use the wood in building houses, coffins, etc. A rather ornamental tree with silvery bark." (*Meyer.*)

16926. Populus sp. **Poplar.**

From Chang-li. "(No. 30.) A very large poplar with a straight, smooth trunk; well fitted for park or avenue planting." (*Meyer.*)

16927. Vitis sp. **Grape.**

From Hsuen-hwa-fu. "(Nos. 102, 106, and 107.) A fine white grape, berries very long and in heavy bunches; commands high prices and is really a fine table grape; can be kept in paper-lined baskets in a cool place until Chinese New Year (early February)." (*Meyer.*)

16928. VICIA sp. **Vetch.**

From Thomas, Oreg. Presented by Mr. S. W. Gaines. Received December, 1905.

16929 and 16930. QUERCUS spp. **Truffle oaks.**

From Paris, France. Received through Vilmorin-Andrieux & Co., December 30, 1905.

16929. QUERCUS ILEX. **Holly oak.**

16930. QUERCUS PUBESCENS.

Trees introduced for truffle culture.

16931 to 16939.

From St. Louis, Mo. Received through the Missouri Botanical Gardens, January 2, 1906.

A collection of roots, as follows:

16931. MARANTA KEGELJANI.

16932. CALATHEA PRINCEPS.

16933. CALATHEA CROTALIFERA.

16934. CALATHEA sp.

16935. CALATHEA ORNATA SANDERIANA.

16936. CALATHEA OPPENHEIMIANA.

16937. CALATHEA VITTATA.

16938. COLOCASIA NEO-GUINEENSIS.

16939. MARANTA LEUCONEURA KERCHOVIANA.

16940 to 16944.

From Chico, Cal. Grown at the Plant Introduction Garden in 1905. Received December 22, 1905.

Seeds, as follows:

16940. ARACHIS HYPOGAEA. **Peanut.**

Grown from No. 4253.

16941. ARACHIS HYPOGAEA. **Peanut.**

Grown from No. 9406.

16942. VOANDZEIA SUBTERRANEA. **Woandzu.**

Grown from No. 10450.

16943. ARACHIS HYPOGAEA. **Peanut.**

Grown from No. 10622.

16944. ARACHIS HYPOGAEA. **Peanut.**

Grown from No. 11140.

16945 to 16948.

From Victoria, Kamerun, Africa. Received through Mr. H. Nehrling, Gotha, Fla., January 3, 1906.

16945. AMOMUM MELEGUETA. **Paradise seed.**

"Native of tropical western Africa. This plant belongs to the ginger family. From a long, scaly rootstock there are produced leafy branches and short, leafless, flower-bearing branches bearing a single white-purple flower. The fruit is red, large, fleshy, and pear-shaped, containing a large number of brown seeds called paradise seed or Guinea grains. Used only in veterinary medicine and in adulterating liquors and pepper." (*Wheeler.*)

16946. XANTHOSOMA sp. **Yautia.**

"*Xanthosoma violaceum;* cultivated." (*Nehrling.*)

16945 to 16948—Continued.

16947. XANTHOSOMA sp. **Yautia.**

"With light green petioles; cultivated." (*Nehrling.*)

16948. XANTHOSOMA sp. **Yautia.**

"*Colocasia antiquorum;* cultivated." (*Nehrling.*)

16949 to 16979.

From Paris, France. Received through Vilmorin-Andrieux & Co., December 29, 1905.

A collection of seeds, as follows:

16949. ARRHENATHERUM ELATIUS. **Tall oat-grass.**

16950. TRISETUM PRATENSE.

16951. AVENA PUBESCENS. **Downy oat-grass.**

16952. ANTHRISCUS SYLVESTRIS.

16953. BRACHYPODIUM PINNATUM.

16954. BRACHYPODIUM SYLVATICUM.

16955. BROMUS INERIMS. **Smooth brome-grass.**

16956. CORONILLA VARIA. **Crown vetch.**

16957. CYTISUS PROLIFERUS ALBUS. **Broom.**

16958. DACTYLIS GLOMERATA. **Orchard grass.**

16959. FESTUCA DUMETORUM.

16960. FESTUCA ELATIOR. **Tall fescue.**

16961. FESTUCA HETEROPHYLLA. **Various-leafed fescue.**

16962. FESTUCA OVINA. **Sheep's-fescue.**

16963. FESTUCA PRATENSIS. **Meadow fescue.**

16964. FESTUCA RUBRA. **Red fescue.**

16965. FESTUCA TENUIFOLIA. **Slender-leafed fescue.**

16966. HOLCUS MOLLIS. **Creeping soft-grass.**

16967. MELICA CILIATA.

16968. MELICA COERULEA.

16969. MELILOTUS ALBA. **White melilot.**

16970. PASPALUM STOLONIFERUM.

16971. PHALARIS ARUNDINACEA. **Reed canary grass.**

16972. PHLEUM PRATENSE. **Timothy.**

16973. POA COMPRESSA. **Canadian bluegrass.**

16974. POA FERTILIS.

16975. POA SUDETICA.

16976. STIPA TENACISSIMA. **Esparto grass.**

16977. TRIFOLIUM INCARNATUM. **Crimson clover.**

16978. TRIFOLIUM INCARNATUM. **Crimson clover.**

Late.

16979. TRIFOLIUM INCARNATUM. **Crimson clover.**

Extra late; white flowering.

16980 to 16984. ORYZA SATIVA. Rice.

From Sivaganga, Madura district, South India. Received through Mr. A. P. Minor, January 4, 1906.

16980.

Jeeragasamba. "(No. 1.) An elegant, very small-sized rice of exceptional whiteness when properly cleaned. It requires an old, well-cultivated soil and will then yield, say, 3,000 pounds per acre or more according to manure applied. The straw is finer and less tough than that of the commoner kinds of paddy and hence is especially valuable as fodder. In good soil it is a 4½ to 5 months' crop." (*Minor.*)

16981.

Varikarudan. (No. 2.)

16982.

Milagi. "(No. 3.) Nos. 2 and 3 give fine white rice, preferred to all others by the higher classes in this part of India. The flavor is supposed to be exceptionally good. Both are hardy and require no exceptional treatment. In an average soil they yield 3,000 pounds per acre and in a well-manured soil up to 5,000 pounds per acre. The straw is good fodder for cattle. The duration of crop is ordinarily 4½ to 5½ months." (*Minor.*)

16983.

Vellakattai, or *Sirumanian.* (No. 4.)

16984.

Erangal, or *Naryan.* "(No. 5.) Nos. 4 and 5 yield a large white rice which is considered particularly nourishing by the lower classes; very hardy, vigorous grower, even in a comparatively poor soil. An ordinary outturn, with little or no manure, is 2,500 pounds per acre, which may be nearly doubled by manuring. The straw is coarser than that obtained from Nos. 2 and 3. The crop matures in 3½ to 4 months, according to soil and other conditions." (*Minor.*)

16985 to 17034.

From Erfurt, Germany. Received through Haage & Schmidt, December 28, 1905.

Seeds of forage crops, as follows:

16985. ASTRAGALUS FALCATUS.
16986. AVENA FLAVESCENS.
16987. BROMUS PRATENSIS.
16988. DACTYLIS GLOMERATA.
16989. FESTUCA ARUNDINACEA.
16990. FESTUCA DURIUSCULA.
16991. FESTUCA ELATIOR.
16992. FESTUCA HETEROPHYLLA.
16993. FESTUCA OVINA.
16994. FESTUCA PRATENSIS.
16995. FESTUCA RUBRA.
16996. FESTUCA TENUIFOLIA.
16997. LUZULA ALBIDA.
16998. LATHYRUS HIRSUTUS.
16999. MELILOTUS COERULEA.
17000. MELILOTUS ALTISSIMA.
17001. MELILOTUS OFFICINALIS.
17002. MELILOTUS PARVIFLORA.
17003. MELILOTUS SEGETALIS.
17004. MELILOTUS SULCATA.
17005. PHALARIS ARUNDINACEA.
17006. PISUM JOMARDI.
17007. PLANTAGO PSYLLIUM.
17008. SPARTIUM SCOPARIUM.
17009. VICIA AGRIGENTINA.
17010. VICIA AMBIGUA.
17011. VICIA BIENNIS.
17012. VICIA CALCARATA.
17013. VICIA CASSUBICA.
17014. VICIA CORDATA.
17015. VICIA CORNIGERA.
17016. VICIA CUSPIDATA.

16985 to 17034—Continued.

17017. Vicia disperma.
17018. Vicia ferruginea.
17019. Vicia gerardi.
17020. Vicia globosa.
17021. Vicia grandiflora.
17022. Vicia hybrida.
17023. Vicia lutea.
17024. Vicia macrocarpa.
17025. Vicia multiflora.
17026. Vicia onobrychioides.
17027. Vicia pannonica.
17028. Vicia peregrina.
17029. Vicia picta.
17030. Vicia pseudo-cracca.
17031. Vicia sylvatica.
17032. Vicia spuria.
17033. Vicia striata.
17034. Vicia tricolor.

17035 to 17050.

From Sydney, New South Wales. Presented by Prof. J. H. Maiden, director of Botanic Gardens. Received January 2, 1906.

17035. Andropogon bombycinus.
17036. Astrebla pectinata.
17037. Astrebla elymoides.
17038. Cenchrus australis.
17039. Chloris truncata.
17040. Chloris ventricosa.
17041. Chrysopogon gryllus.
17042. Panicum decompositum.
17043. Panicum prolutum.
17044. Paspalum brevifolium.
17045. Pennisetum compressum.
17046. Pollinia fulva.
17047. Chaetochloa aurea.
17048. Sporobolus lindleyi.
17049. Stipa elegantissima.
17050. Stipa tuckeri.

17051 and 17052. Bouteloua spp.

From Silver City, N. Mex. Received through Mr. James K. Metcalfe, January 5, 1906.

17051. Bouteloua curtipendula. **Tall grama grass.**
17052. Bouteloua oligostachya. **Blue grama grass.**

17053. Solanum commersoni. **Aquatic potato.**

From Burlington, Vt. Received through Prof. William Stuart, of the Agricultural Experiment Station, January 6, 1906.

Tubers grown from stock obtained through Dr. Edouard Heckel, of Marseille, France. "Heckel is not at all of the opinion that *Solanum commersonii* should replace our common potato; but if it is adapted to swampy locations it would become very valuable to us, and possibly nonbitter hybrids might be produced for poorly drained soils by cross fertilization." (*L. Wittmack, Gartenflora, 54: 452, 1905.*) (See note to No. 10324.)

17054. Solanum commersoni. **Aquatic potato.**

From Santa Rosa, Cal. Received through Mr. Luther Burbank, November 28, 1905, and February 10, 1906.

Tubers grown from No. 10324. "Has rather small vines, produces an enormous amount of flowers all summer and a reasonable amount of seed balls, which, however, unless pollenized from some other variety never produce a seed. Owing to its wandering disposition, not extra quality, and not being very productive it will never become popular. I judge from what I have read in the French papers that the bluish variety is better." (*Burbank.*)

17055 to 17058.

From Buitenzorg, Java. Presented by Doctor Treub, director of the Department of Agriculture. Received January 5, 1906.

17055. ARACHIS HYPOGAEA. **Peanut.**
"*Katjang holle.*"

17056. ARACHIS HYPOGAEA. **Peanut.**
"*Katjang banah waspada.*"

17057. ARACHIS HYPOGAEA. **Peanut.**
"*Katjang amerika.*"

17058. VOANDZEIA SUBTERRANEA. **Woandzu.**
"*Katjang bogor.*"

17059. FESTUCA PRATENSIS. Meadow fescue.

From Marysville, Kans. Received through Mr. Frank W. Oakley, January 5, 1906.

17060 and 17061.

From Honolulu, Hawaii. Received through Dr. J. N. Rose, of the United States National Museum, Washington, D. C., December 29, 1905.

Seeds, as follows:

17060. OREODOXA REGIA. **Royal palm.**

(No. 05/876.)

17061. ARISTOLOCHIA sp.

(No. 05/875.)

17062. SOLANUM MELONGENA. Eggplant.

From Trebizond, Turkey. Presented by Mr. Vital Ojalvo, vice-consul, through Mr. Frank Benton. Received January 6, 1906.

Seed of a violet-colored variety.

17063 to 17066.

From Moscow, Russia. Presented by Prof. William R. Williams, of the Moscow Agricultural Institute. Received January 8, 1906.

17063. ALOPECURUS RUTHENICUS.

17064. BROMUS MOLLIS.

17065. BROMUS RACEMOSUS.

17066. BROMUS SYLVATICUS.

17067 and 17068.

From Paris, France. Received through Vilmorin-Andrieux & Co., January 9, 1906.

17067. MELILOTUS COERULEA. **Blue sweet clover.**

17068. CORONILLA SCORPIOIDES.

17069 and 17070.

From Dreshertown, Pa. Received through Thomas Meehan & Sons, January 9, 1906.

Stocks upon which to graft imported cuttings, as follows:

17069. MALUS MALUS. **Apple**

17070. PYRUS COMMUNIS. **Pear.**

17071. PANICUM LAEVIFOLIUM.

From Pretoria, Transvaal, South Africa. Presented by Prof. J. Burtt Davy, agrostologist and botanist of the Department of Agriculture. Received January 9, 1906.

17072 to 17075. ELEUSINE CORACANA.

From Bombay Presidency, India. Received through Mr. F. Fletcher, Deputy Director of Agriculture, January 9, 1906.

17072. "*Mukti Nagli.*" (Close heads.) From Lonawla.
17073. "*Zipri Nagli.*" (Open heads.)
17074. "*Nagli.*" (Red.)
17075. "*Nagli.*" (White.)

17076 to 17092.

From Paris, France. Received through Vilmorin-Andrieux & Co., January 9, 1906.

Seeds of forage crops, as follows:

17076.	ANTHYLLIS VULNERARIA.	**Kidney vetch.**
17077.	ASTRAGALUS FALCATUS.	**Milk vetch.**
17078.	BRASSICA OLERACEA.	**Improved branching borecole.**
17079.	BRASSICA OLERACEA.	**Thousand-headed kale.**
17080.	CYTISUS SCOPARIUS.	**Common broom.**
17081.	FESTUCA DUMETORUM.	
17082.	FESTUCA HETEROPHYLLA.	**Various-leafed fescue.**
17083.	FESTUCA OVINA.	**Sheep's-fescue.**
17084.	FESTUCA RUBRA.	**Red fescue.**
17085.	FESTUCA TENUIFOLIA.	**Slender-leaved fescue.**
17086.	LOTUS VILLOSUS.	**Greater bird's-foot trefoil.**
17087.	MEDICAGO MEDIA.	**Sand lucern.**
17088.	POA FERTILIS.	
17089.	POA NEMORALIS.	**Wood meadow grass.**
17090.	POA SEMPERVIRENS.	
17091.	POA TRIVIALIS.	**Rough-stalked meadow grass.**
17092.	ULEX EUROPAEUS.	**Furze, gorse, or whin.**

17093. CHRYSOPHYLLUM CAINITO. **Star-apple.**

From Washington, D. C. Plants grown in the Department greenhouse from seed obtained in 1904 by Mr. G. N. Collins in Jamaica, British West Indies; numbered January 10, 1906.

Fruit from which seeds were obtained was large and light colored.

17094 and 17095. ERAGROSTIS ABYSSINICA. **Teff.**

From Abyssinia. Received through His Excellency S. A. Ras Makomen, January 12, 1906.

17094. Pearl white seed.
17095. Brown seed mixed with white.

"Teff is the staple food of the Abyssinians. Considering the general physique of the nation and that teff is practically the sole means of nourishment, as the poorer classes seldom taste meat, the cereal is undoubtedly rich in nitrog-

17094 and 17095—Continued.

enous matter. It possesses, too, a sufficient quantity of starchy matter to constitute a fairly hygienic diet. Teff is utilized as follows: Ground into flour; made into a semiliquid or thin paste consistency by adding water, and placed in earthen jars. The leaves of the 'Geaho' (gesho) plant, which yield a ferment, are added. When fermentation is complete the sirupy mixture is slowly poured on the surface of well-heated, circular, flat baking pans. After a certain amount of manipulation and turning over, a semiaerated, flat, round cake is the result. This keeps for months without deterioration, is broken into fragments and dried in the sun. The dried bread is used as their chief supply when at war or on expeditions. Teff undoubtedly possesses highly nutritious qualities and is decidedly more digestible than wheat. It could therefore be exploited as an invalid food. Teff is not known to possess distinct drought-resisting properties." (*Extract from letter from the British consul at Adis Ababa, Abyssinia.*)

17096. PHASEOLUS RADIATUS. **Mung bean.**

From Augusta, Ga. Received through the N. L. Willet Seed Company, January 12, 1906.

Newman.

17097 to 17100.

From Channing, Tex. Received through Mr. A. H. Leidigh, January 12, 1906.

17097. TRITICUM DURUM. **Macaroni wheat.**

Galgalos. Grown from No. 9872.

17098. TRITICUM DICOCCUM. **Black emmer.**

Grown from No. 11650.

17099. PANICUM MILIACEUM. **Broom-corn millet.**

Black Voronezh. Grown from No. 9425.

17100. HORDEUM VULGARE. **Barley.**

Tennessee Winter. Grown from No. 11193.

17101 to 17103.

From Sibpur, Calcutta, India. Received through Mr. A. Gage, acting superintendent, Royal Botanic Gardens, January 13, 1906.

A collection of tubers, as follows:

17101. AMORPHOPHALLUS CAMPANULATUS. **Stanley's washtub.**

The members of this genus of aroids are natives of India and other parts of tropical Asia, where they are cultivated for the starch which is so abundant in the rootstock. *Amorphophallus campanulatus* has a tuber weighing 8 to 10 pounds, shaped like a flat cheese; spathe nearly 2 feet broad and 15 inches high, with a horizontal, spreading, fluted border, red-purple on the border, then grayish white spotted and purple in the center. Doctor White says of it that when in flower the fetor it exhales is most overpowering, and so perfectly resembles that of carrion as to induce flies to cover the club of the spadix with their eggs.

17102. COLOCASIA ANTIQUORUM ESCULENTA (?)

(Labeled "*Alocasia antiquorum.*")

17103. ALOCASIA INDICA. **Alocasia.**

"These roots are cultivated to some extent throughout India, but do not occupy so important a place in the domestic economy there as do the taros in Polynesia or the yautias in tropical America." (*Barrett.*)

17104. PHALARIS CANARIENSIS. **Canary grass.**

From Malta. Received through Mr. J. Borg, of the St. Antonio Gardens, January 15, 1905.

Malta canary seed. "Requires the same culture as the late varieties of wheat. Very productive and remunerative, although not much grown in Malta. The grain is slightly larger in size than the best Sicilian canary seed; the plant is also stouter." (*Borg.*)

17105. CINNAMOMUM CAMPHORA. **Camphor.**

From Paris, France. Received through Vilmorin-Andrieux & Co., January 15, 1906.

This plant is the source of camphor, the gum being obtained from the extracted juice. The tree is difficult to transplant and is best propagated by seeds, sown as soon as ripe in a shaded bed, the seedlings being transplanted when very small into pots and kept thus until ready to plant out permanently. The soil best suited to camphor is a sandy loam.

17106 to 17130. AMYGDALUS COMMUNIS. **Almond.**

From Girgenti, Italy. Received through Hon. Francis Ciòtta, United States consular agent, January 15, 1906.

Almond cuttings, as follows:

17106.

Cornutella. This is a plant requiring special care, but is highly valued for its sweet and agreeable flavor. The tree will attain a vigorous and strong growth; can be cultivated in all climates.

17107.

Cavaliera. In this the vegetation is especially vigorous, resists frost, yields well, and the fruit is extremely tender, being much sought after as a table fruit.

17108.

Caccia. In this the vegetation is extremely strong, resists the rigors of winter, produces richly, and is incomparable for roasting and for making the finest torroni, the tower-like almond cakes made of almonds and honey.

17109.

Bianca. The tree is of medium development, wood not very solid, yields well, fruit extremely sweet and highly valued for table use.

17110.

Selvaggia. This tree has great resistance, grows in a very luxuriant manner and regular form; bears a tender fruit used by preference for the ordinary torroni, almond cakes of the common quality.

17111.

Carina. This tree is of medium development and is very resistant to frost and inclement weather. It produces abundant small, tender fruit which is excellent for pastry and for the almond paste.

17112.

Regaliana. This tree is of medium size and of ordinary resistance; produces abundantly a fruit valuable for the table, exquisitely sweet and sought for in all the markets for its excellent qualities.

17113.

Inglese. This takes its name from the extensive use to which it is put in the manufacture of special pastes in England. It is very delicate and tender, superior for the table and excellent also for making sweetmeats.

17106 to 17130—Continued.

17114.

Tramontana. Its resistance to frost, which is strong in this almond tree, enables it to grow vigorously in the tramontane regions without injury from exposure to those northern winds. The fruit is sweet and sought after for confectionery.

17115.	*Washington.*	**17123.**	*Sanguisuga.*
17116.	*Sicilia.*	**17124.**	*Fra Elia.*
17117.	*Racalmuto.*	**17125.**	*Milocca.*
17118.	*Signora.*	**17126.**	*Kruger.*
17119.	*Màntia.*	**17127.**	*Gioglio.*
17120.	*Gioia.*	**17128.**	*Nocciola.*
17121.	*Sanfilippo.*	**17129.**	*Rocca Rossa.*
17122.	*Striata.*	**17130.**	*Giapponese.*

17131. ELYMUS VIRGINICUS SUBMUTICUS. **Wild rye-grass.**

From Union, Oreg. Received through Mr. George Gammie, of the Agricultural Experiment Station, January 13, 1906.

A native of the Rocky Mountains. A coarse, perennial grass, growing on alluvial river banks or in rich low grounds. This grass frequently forms a considerable portion of native meadow lands and makes a coarse hay. It starts growth early in the spring and thus affords a good pasturage.

17132. SOLANUM COMMERSONI. **Aquatic potato.**

From New York, N. Y. Received through J. M. Thorburn & Co., January 15, 1906.

Violet tubers procured direct from Mr. J. Labergerie, and will be compared with the form imported direct from Heckel and the forms received from Luther Burbank. (For description see "Le Solanum Commersonii et ses Variations Pomme de Terre de L'Uruguay (Variete Violette)," by J. Labergerie.)

17133. SECHIUM EDULE. **Chayote.**

From South Island, S. C. Received through Gen. E. P. Alexander, January 12, 1906.

17134. PHASEOLUS RADIATUS. **Mung bean.**

From Chillicothe, Tex. Received through Mr. A. B. Conner, December 23, 1905.

Udid. Grown from No. 8541.

17135 to 17137. ORYZA SATIVA. **Rice.**

From Yokohama, Japan. Received through the Yokohama Nursery Company, January 9, 1906.

Japanese rice grown in Shizuoka Ken district, as follows:

17135. *Tamanishiki.*

17136. *Araki.*

17137. *Mochi.* A glutinous variety mostly used for cakes, candy, etc.

17138 to 17140.

From Manila, P. I. Received through Mr. W. S. Lyon, horticulturist, Bureau of Agriculture, January 16, 1906.

17138. LILIUM PHILIPPINENSE. **Benguet lily.**

"Its grassy foliage is striking and graceful. It forces here admirably, and I think should be a good subject for a forcing bulb in cultivation." (*Lyon.*)

17139. STERCULIA FOETIDA.

"*Bobug.*" A tall, handsome, smooth tree with whirled horizontal branches, large compound leaves, and large, dull red flowers appearing with the leaves in spreading panicles. The fruit consists of five large follicles, containing 10 to 15 smooth, black seeds the size of filberts, which are roasted and eaten like chestnuts. Native throughout the tropics of the Old World.

17140. ACTINORHYTIS CALAPPARIA. **Palm.**

"One of the most attractive palms of the Areceae group that I have ever seen. I think it would prove a useful subject for house decorations, as our native gardeners grow it to a large size (8 to 10 feet) in flat, shallow, 12-inch pans." (*Lyon.*)

17141. GARCINIA MORELLA. **Gamboge.**

From Kingston, Jamaica, British West Indies. Received through Dr. W. Fawcett, director of Hope Gardens, January 18, 1906.

Seeds obtained for the purpose of propagating seedling stocks upon which to graft the mangosteen.

17142 and 17143. PASSIFLORA spp.

From Washington, D. C. Plants grown on the grounds of the Department of Agriculture, and numbered for convenience in recording distribution on January 18, 1906.

17142. PASSIFLORA RACEMOSA. **Passion flower.**

17143. PASSIFLORA QUADRANGULARIS VARIEGATA. **Granadilla.**

17144. ORYZA SATIVA. **Rice.**

From North Galveston, Tex. Received through Dr. S. A. Knapp, January 15, 1906.

Egyptian. "The *Egyptian* rice is locally known in Louisiana as *Bull* rice and has been grown there for a great many years. It has a large berry of the Japanese type—that is, thick and short kernel—somewhat larger than the *Kiushi* rice, dark colored and much softer when it first ripens, so that it answers excellently for the purpose of stock food. It also has more protein than the ordinary rice. The characteristics of its growth are that it requires very little water, has a strong stalk, abundant leaf, is a heavy producer, and will generally make a crop even though the other rices fail. For these reasons it is grown in Louisiana as a stock food." (*Knapp.*)

17145. DIOSPYROS VIRGINIANA. **Persimmon.**

From Augusta, Ga. Received through the P. J. Berckmans Company, January 19, 1906.

Seedling stocks for use in grafting imported scions.

17146. GARCINIA MANGOSTANA. **Mangosteen.**

From Buitenzorg, Java. Received through Dr. M. Treub, director of the Botanical Gardens, January 19, 1906.

17147. HORDEUM DISTICHUM NUTANS. **Barley.**

From Fort Atkinson, Wis. Received through Mr. W. D. Hoard, January 17, 1906.

Hanna.

17148. AVENA SATIVA. **Oat.**

From Brandon, Wis. Received through Mr. David Jones, January 20, 1906.

Kherson.

17149. XANTHOSOMA sp. **Yautia.**

From Linares, Nueva Leon, Mexico. Presented by Dr. F. Franceschi, Santa Barbara, Cal. Received January 22, 1906.

Linares.

17150. REHMANNIA ANGULATA.

From Narberth, Pa. Received through Mr. William Tricker, January 19, 1906.

"Introduced by James Veitch & Son, London, England. A native of central China; has proved hardy on the Cotswold Hills, England, 750 feet above sea level, without protection; and with moderate protection withstood the severe winter of 1904–5 in Massachusetts. Awarded certificate of merit at Royal Horticultural Society in 1903. Seedlings raised in the spring of 1905, which were planted out under similar conditions with other herbaceous plants, made rapid progress and some commenced to flower in July and were still in flower October 19. Others probably will not flower until 1906, exhibiting more the character of biennials. The plants are vigorous, leaves radical laciniate, of a deep green color and 12 to 15 inches long. Some plants sent up one spike from the main crown, while others sent up several spikes but weaker. Main spikes have produced lateral growths with flowers. Several spikes were 4 feet tall. Flowers like *Bignonia grandiflora* (except in color) are produced at the axils of the leaves. Size, 3 inches in diameter, color, rose-purple with a rich yellow throat spotted with purple. The individual flower resembles *Incarvillea delavayi.* Plants thrive in ordinary garden soil; should have full sunshine and ample space between plants—about 2 feet. Flowers are good for cutting, remaining several days in good condition." (*Tricker.*)

17151. CITRUS AURANTIUM. **Orange.**

From Siang-tan, Hunan Province, China. Received from Mr. S. A. McCalla, through Prof. H. A. Morgan, director of the Agricultural Experiment Station, Knoxville, Tenn., January 17, 1906.

Orange seeds said by Doctor Webber to be of a tangerine type.

"The oranges grown hereabouts are of both the loose-skinned and the tight-skinned varieties. None of them are especially good. The town of Li-ling, which has a latitude of 27° 42′ N., is the northern limit of the tight-skinned oranges, but the loose-skinned variety grows as far north as Chang-sha, which is probably about 400 feet above sea level. Nearly every winter there are one or two big snows. I have seen two in the last five years about 9 inches deep; also, from time to time there are freezes, but the orange trees never seem to suffer." (*McCalla.*)

17152 to 17162.

From Chi-li Province, China. Received through Mr. Frank N. Meyer, December, 1905.

Cuttings of fruits and vines, as follows:

17152. PRUNUS ARMENIACA. **Apricot.**

From Tchu-chung. "(No. 118.) This is one of the finest white apricots that grows in China, as I have been told by the natives. They describe the fruit as being very large and white skinned, with a few red spots." (*Meyer.*)

17152 to 17162—Continued.

17153. PRUNUS ARMENIACA. **Apricot.**

From Tcha-ching. "(No. 113.) The kernels of this apricot are sold as almonds; they are small but taste fine. The trees grow very bushy and are grafted upon wild stock." (*Meyer.*)

17154. PRUNUS ARMENIACA. **Apricot.**

From Tcha-ching. "(No. 112.) A large, red apricot described by the natives as being very good." (*Meyer.*)

17155. VITIS VINIFERA. **Grape.**

From Chang-li. "(No. 114.) This is a very fine white grape belonging to the *Muscat* group. In North China it commands more than three times as much money as is paid for the purple grape." (*Meyer.*)

17156. VITIS VINIFERA. **Grape.**

From Hsuen-hwa-fu. "(No. 101.) A splendid green-white grape, considered as the best grape here in China. The berry is very long and the bunches are rather large. The taste is fresh sweet, without being too sweet. An excellent table grape. It is apparently a kind of *Muscat* grape, not being free skinned and having the same general appearance." (*Meyer.*)

17157. VITIS sp. **Grape.**

From Chang-li. "(No. 115.) A dark purple grape; a very heavy bearer. The taste is a trifle watery, but otherwise it is all right. Is a very late grape, the last which appears here on the markets. Free skin; produces very large bunches." (*Meyer.*)

17158. VITIS sp. **Grape.**

From Hsuen-hwa-fu. "(No. 103.) A small purple grape from this region, where it gets intensely cold; the vines are buried over winter." (*Meyer.*)

17159. VITIS sp. **Grape.**

From Hwai-jou. "(No. 95.) A purple grape, said to be early and of good quality." (*Meyer.*)

17160. VITIS sp. **Grape.**

From Hwai-jou. "(No. 94.) A white grape growing near Hwai-jou. I was not able to see any fruit, but am told that it is an early, sweet grape." (*Meyer.*)

17161. VITIS sp. **Grape.**

From Chang-li. "(No. 116.) A light purple colored grape; heavy bearer; large bunches; free skin. Tastes somewhat watery. Might do fine as a wine producer. Is well esteemed here on account of coming the last in season." (*Meyer.*)

17162. (Undetermined.)

From Hwai-jou "(No. 110.) Cuttings of a vine used around here for tying grapes to the trellises. Looks like Aristolochia. Is not produced here, but comes from farther south. It is very tenacious material, admirably fit for the the purpose." (*Meyer.*)

17163 to 17166.

From Queretaro, Mexico. Received through Señor Carlos J. Urquiza, January 20, 1906.

17163. MEDICAGO SATIVA. **Alfalfa.**

17164. VICIA FABA. **Broad bean.**

17165. LENS ESCULENTA. **Lentil.**

17166. (Undetermined.)

Shotolillo.

17167 to 17181.

From Chi-li Province, China. Received through Mr. Frank N. Meyer, January 24, 1906.

A collection of cuttings, as follows:

17167. AMYGDALUS PERSICA. **Peach.**

From Tung-chow. "(No. 35.) A large, white peach, considered a fine fruit by the Chinese. Nonmelting flesh. The tree is a very thrifty grower." (*Meyer.*)

17168. CELTIS sp. **Hackberry.**

From Shan-hai-kwan. "(No. 3.) An oramental shade tree, growing in dry, rocky situations; if not too heavily attacked by gall insects is decidedly ornamental." (*Meyer.*)

17169. CORYLUS sp. **Hazelnut.**

From Shan-hai-kwan. "(No. 7.) A low shrub found on steep, rocky mountain sides. May do well as undershrub beneath tall trees." (*Meyer.*)

17170. CRATAEGUS sp. **Hawthorn.**

From Chang-li. "(No. 10.) A small-leaved Crataegus growing wild in the mountains around here. It is used as stock for *Crataegus pinnatifida.*" (*Meyer.*)

17171. CRATAEGUS PINNATIFIDA. **Hawthorn.**

From Chang-li. "(No. 9.) A very large-fruited variety of which seeds were sent to Washington under No. 57a. A remarkable ornamental tree. Is a slow grower, but has large, glossy, dark green leaves, and is loaded in fall with scarlet fruits. In China itself there is not enough of this fruit to supply the demand for making preserves." (*Meyer.*)

17172. DIOSPYROS KAKI. **Persimmon.**

From Chang-li. "(No. 4.) A medium sized, seedless persimmon. Seems to be a variety of *Diospyros kaki.* Fruit globular, 2 inches in diameter, orange color. The trees grow 30 to 40 feet high." (*Meyer.*)

17173. DIOSPYROS LOTUS. **Persimmon.**

From Chang-li. "(No. 50.) A wild persimmon on which the large seedless varieties are grafted; is itself also an ornamental tree." (*Meyer.*)

17174. POPULUS sp. **Poplar.**

From Shan-hai-kwan. "(No. 14.) A very white barked poplar which is extremely cheery in winter landscape on account of its shining white bark. Grows to a rather large-sized tree, 60 to 80 feet. Well fit for an avenue tree or to be planted in groups in parks." (*Meyer.*)

17175. POPULUS sp. **Poplar.**

From Shan-hai-kwan. "(No. 40.) A very white barked poplar, growing close to the seashore near Shan-hai-kwan. Probably the same as No. 14 (S. P. I. No. 17174), but its locality close to the sea made it look different." (*Meyer.*)

17176. PYRUS sp. **Pear.**

From Chang-li. "(No. 36.) A very small pear. The fruits do not grow larger than a small cherry. Fit perhaps as an ornamental tree." (*Meyer.*)

17177. PYRUS sp. **Pear.**

From Shan-hai-kwan. "(No. 37.) A wild pear growing in a rocky ravine." (*Meyer.*)

17178. PYRUS SINENSIS. **Pear.**

From Chang-li. "(No. 39.) A large yellow pear, nonmelting flesh. Can be kept for many months without spoiling. May be of use in crossing with better kinds." (*Meyer.*)

17167 to 17181—Continued.

17179. Salix sp. **Willow.**

From Shan-hai-kwan. "(No. 49.) A willow which is used to make strong baskets from. The bark of an older tree becomes pitch black and looks as such rather curious." (*Meyer.*)

17180. (Undetermined.)

From Shan-hai-kwan. "(No. 5.) A plant with long, fierce spines, which might make it suitable for a hedge plant; grows to be a good-sized tree." (*Meyer.*)

17181. Xanthoxylum sp. **Prickly ash.**

From Shan-hai-kwan. "(No. 12.) Probably not possible to grow from cuttings. Seeds sent to Washington, D. C., under No. 125a." (*Meyer.*)

17182 to 17234.

From Richmond, New South Wales. Received through Mr. H. W. Potts, principal of the Hawkesbury Agricultural College, January 20, 1906.

Grass seeds, as follows:

17182. Andropogon sp. **Bluestem.**

17183. Andropogon affinis. **Coast bluestem.**

17184. Andropogon sericeus. **Hairy bluestem.**

17185. Astrebla elymoides. **Coarse Mitchell grass.**

17186. Astrebla elymoides. **Coarse Mitchell grass.**

17187. Astrebla pectinata. **Mitchell grass.**

17188. Astrebla pectinata. **Mitchell grass.**

17189. Astrebla triticoides. **Mitchell grass.**

17190. Astrebla triticoides. **Mitchell grass.**

17191. Chloris acicularis. **Star grass.**

17192. Chloris ventricosa. **Windmill grass.**

17193. Chloris truncata. **Umbrella grass.**

17194. Chloris truncata. **Umbrella grass.**

17195. Chrysopogon gryllus.

17196. Deyeuxia forsteri. **Bent-grass.**

17197. Danthonia carphoides. **Oat-grass.**

17198. Danthonia carphoides. **Oat-grass.**

17199. Danthonia nervosa. **Swamp wallaby.**

17200. Danthonia nervosa. **Swamp wallaby.**

17201. Danthonia penicillata. **Wallaby grass.**

17202. Danthonia penicillata. **Wallaby grass.**

Broad-leaved form.

17203. Danthonia semiannularis. **Wallaby grass.**

17204. Danthonia penicillata var.

A broad-leaved variety.

17205. Danthonia penicillata var.

17206. Danthonia penicillata var.

17207. Danthonia penicillata.

17182 to 17234—Continued.

17208. Danthonia penicillata villosa.

17209. Danthonia penicillata.

17210. Danthonia penicillata.

17211. Danthonia semiannularis. **Wallaby grass.**

17212. Diplachne fusca. **Brown-flowered swamp-grass.**

17213. Diplachne fusca **Brown-flowered swamp-grass.**

17214. Diplachne peacockii.

17215. Eleusine aegyptiaca. **Crowfoot.**

17216. Eragrostis sp. (Probably *E. leptostachya.*)

17217. Eragrostis brownei. **Love-grass.**

17218. Eragrostis leptostachya. **Love-grass.**

17219. Eragrostis pilosa. **Weeping love-grass.**

17220. Eriochloa polystachya. **Early spring-grass.**

17221. Neurachne mitchelliana. **Mulga grass.**

17222. Panicum arachyrachus.

17223. Panicum decompositum. **Australian millet.**

17224. Panicum flavidum. **Vandyke grass.**

17225. Panicum flavidum. **Vandyke grass.**

17226. Panicum leucophaeum. **Cotton grass.**

17227. Panicum prolutum.

17228. Panicum prolutum

17229. Poa caespitosa. **Tussock poa.**

17230. Pollinia fulva. **Sugar grass.**

17231. Pappophorum commune. **Pappus grass.**

17232. Pappophorum commune. **Pappus grass.**

17233. Chaetochloa aurea. **Yellow foxtail.**

17234. Diplachne dubia. **Cane-grass.**

17235. Aralia cordata. **Udo.**

From Yokohama, Japan. Received through the Yokohama Nursery Company, January 26, 1906.

Kan udo.

17236 to 17244.

From Buitenzorg, Java. Received through Dr. M. Treub, director of the Department of Agriculture, January 26, 1906.

17236. Alocasia macrorhiza.

Malay name "Senteh."

17237 to **17244.** Colocasia antiquorum. **Taro.**

17237. Variety *nigra.* Malay name "Kiempoel ietem."

17238. Variety *monorhiza atroviridis.* Malay name "Talus romah."

17239. Variety *monorhiza scripta.* Malay name "Talus soerat."

17240. Variety *monorhiza nigra.* Malay name "Talus lampoeng ietem."

17241. Variety *monorhiza nigra.* Malay name "Talus lahoen indoeng."

17236 to 17244—Continued.

17242. Variety *monorhiza bayabon.* Malay name "Talus pandan."

17243. Variety *monorhiza bayabon.* Malay name "Talus ketan."

17244. Variety *monorhiza bayabon.* Malay name "Talus kiara."

17245. ERODIUM CYGNORUM. **Stork's-bill or crow's-foot.**

From Sydney, New South Wales. Presented by the director of the Botanic Gardens through Mr. Walter S. Campbell, director of Agriculture. Received January 22, 1906.

"An annual or biennial herb with procumbent or slightly erect stems extending from 1 foot to 3 feet or more in length. This plant is widely distributed throughout the Australian continent, being found in the interior of all the colonies, and in some situations it is moderately plentiful. Its free-seeding qualities have rendered it somewhat proof against extermination. During the spring and early summer months this plant affords a rich succulent herbage, which herbivora of all descriptions are remarkably fond of. Horses will often leave good herbage to browse upon it. Pastoralists speak very highly of this plant as affording good herbage while it is in a young state. But when it is ripening its seeds it is somewhat dreaded by the sheep owner on account of the sharp pointed seed lobes, which not only attach themselves firmly to the wool but the barbed points often penetrate the skin of the animal. Notwithstanding this, however, the plant has much to recommend it as a pasture herb, for it will grow well on the poorest of soils. Many of the dry sandhills of the interior would have little vegetation on them during the early summer months if it were not for this plant. Under cultivation it produces a great amount of herbage, and if cut when it shows its flowers it is not only valuable as a green feed, but it can be made into capital hay. Taking into consideration its great productiveness, we think it might be turned into ensilage with good results. *E. cygnorum* is the only species of the genus that is endemic in Australia." (*Flora Austr., 1:297.*)

17246 and 17247. NICOTIANA SANDERAE.

From St. Albans, England. Received from Sander & Sons through J. M. Thorburn & Co., New York, N. Y., January 18, 1906.

17246. NICOTIANA SANDERAE. **17247.** NICOTIANA SANDERAE hyb.

17248 and 17249.

From Salisbury, Rhodesia, South Africa. Presented by Hon. E. Ross Townsend, Secretary for Agriculture. Received January 29, 1906.

17248. CHLORIS VIRGATA. **Rhodes-grass.**

"Regarded as a very valuable forage plant." (*Townsend.*) (See No. 9608.)

17249. PANICUM sp. **White rapoka.**

"The *rapoka* is a millet which forms the staple article of diet among Mashona natives, and the grass is considered to be excellent for making hay or ensilage. This sample is supposed to be a new and better variety recently introduced from north of the Zambesi." (*Townsend.*)

17250. PISTACIA VERA. **Pistache.**

From Saratoga, Cal. Presented by Rev. A. Fuller. Received January 29, 1906.

Large Red Aleppo.

17251 to 17280. GLYCINE HISPIDA. **Soy bean.**

From Arlington Farm, Virginia.

A collection of soy beans grown on the Arlington Farm in 1905 from seed received through the Division of Agrostology.

Black varieties:

17251. Medium early, black. Grown from Agrost. Nos. 1978, 1979, and 2033, combined.

17251 to 17280—Continued.

Black varieties—Continued.

17252. Flat, medium large, late, black; third crop from Agrost. No. 1293.

17253. Medium black; second crop from Agrost. No. 1536.

17254. Medium black, small seeded; first crop from Agrost. No. 1980.

17255. Medium black, medium early; second crop from Agrost. No. 1188.

Brown varieties:

17256. Medium, reddish brown; second crop from Agrost. No. 1542.

17257. *Brown Eda Mame*, medium early; second crop from Agrost. No. 1185.

17258. *Ogemaw*, early; first crop from Agrost. No. 1992 or S. P. I. No. 13502.

17259. Brown, early; first crop from Agrost. No. 2031.

Green varieties:

17260. *Green Samarow*, medium, medium early; first crop from Agrost. No. 1972.

17261. Large, medium, green; fourth crop from Agrost. No. 912 or S. P. I. No. 13503, first crop from Agrost. Nos. 1764 and 1971, combined.

Greenish-yellow varieties:

17262. Small, early, greenish yellow; third crop from Agrost. No. 1297.

17263. Small, medium late, greenish yellow; second crop from Agrost. No. 1539.

17264. Medium late, greenish yellow; second crop from Agrost. No. 1198.

17265. Medium late, greenish yellow; second crop from Agrost. No. 1200.

17266. Large, medium late, greenish yellow; second crop from Agrost No. 1171 or S. P. I. No. 9409.

17267. Late, large, greenish yellow; third crop from Agrost. No. 1298.

Yellow varieties:

17268. *Ito San*, medium, early, yellow; first crop from Agrost. Nos. 1973, 1974, 1975, and 1765, combined.

17269. Dwarf, early, yellow; third crop from Agrost. No. 976.

17270. Medium yellow, small seed; fourth crop from S. P. I. No. 4912, third crop from Agrost. No. 1169 or S. P. I. No. 9407, and first crop from S. P. I. No. 12399.

17271. Medium early, yellow; second crop from Agrost. No. 1194.

17272. Small, medium yellow; second crop from Agrost. No. 1538.

17273. Medium early, yellow; second crop from Agrost. No. 1197.

17274. Small, early, yellow; second crop from Agrost. No. 1199.

17275. Medium yellow, large seed; third crop from Agrost. No. 1170 or S. P. I. No. 9408, first crop from Agrost. No. 1170–2 or S. P. I. No. 12400, and third crop from Agrost. No. 1296.

17276. Medium early, yellow from Thackara; second and third crops from Agrost. No. 1299.

17277. Medium early, yellow; third crop from Agrost. No. 1295.

17278. Large, medium late, yellow; first crop from Agrost. No. 2032.

17279. Large, late, yellow; first crop from Agrost. No. 2034.

17280. Large, late, yellow; first crop from Agrost. Nos. 1976 and 1977.

17281. MEDICAGO SATIVA. **Alfalfa.**

From Deseret, Utah. Received through Mr. Frank Hinckley, January 31, 1906.

Turkestan. Grown from S. P. I. No. 991.

17282. SECHIUM EDULE. **Chayote.**

From New Orleans, La. Presented by Mr. Aristide Hopkins. Received January 31, 1906.

"Fruit of a white variety considered more delicate than the green variety." (*Hopkins.*)

17283 to 17326. PHASEOLUS spp. **Bean.**

From Arlington Farm, Virginia.

A collection of beans grown on the Arlington Farm in 1905 from S. P. I. seed.

PHASEOLUS RADIATUS. **Mung bean.**

17283. Very early. Grown from No. 1161.

17284. Very early. Grown from No. 8814.

17285. Very early. Grown from No. 9889.

17286. Larger than No. 17283. Grown from No. 6430.

PHASEOLUS sp.

17287.

PHASEOLUS RADIATUS. **Mung bean.**

17288. Larger than No. 17283. Grown from No. 10407.

17289. Medium early, medium size. Grown from No. 13394.

17290. Medium early, medium size. Grown from No. 13397.

17291. Medium early, medium size. Grown from No. 13398.

17292. Early, medium size. Grown from No. 13396.

17293. Medium early, medium large. Grown from No. 10610.

17294. Medium early, medium large. Grown from No. 9786.

17295. Early, medium large. Grown from No. 8540.

17296. Early, large. Grown from No. 8486.

17297. Smaller than others. Grown from No. 5071.

17298. Earlier and larger, but otherwise similar to No. 17297. Grown from No. 5437.

17299. Late, medium size. Grown from No. 10527.

17300. Late, large. Grown from No. 12775.

17301. Late, large. Grown from No. 13395.

17302. Medium late, large. Grown from No. 6562.

17303. Medium late. Grown from No. 6378.

17304. Late, large. Grown from No. 1385.

PHASEOLUS MAX. **Mung bean.**

17305. Medium early, small. Grown from No. 8541.

17306. Medium, poor. Grown from No. 13400.

17307. Medium, poor. Grown from No. 13401.

17308. Trailing. Grown from No. 13402.

17309. Trailing. Grown from No. 13403.

17283 to 17326—Continued.

PHASEOLUS CALCARATUS.

17310. Late, large. Grown from No. 6564.

17311. Late, medium large. Grown from No. 13380.

17312. Late, medium large. Grown from No. 13383.

17313. Late, medium size. Grown from No. 13381.

17314. Late, medium size. Grown from No. 13382.

PHASEOLUS ANGULARIS. **Adzuki bean.**

17315. Very early, small. Grown from No. 10523.

17316. Large, similar to No. 17315. Grown from No. 8488.

PHASEOLUS sp.

17317. Earlier and larger than the average. Grown from No. 13393.

17318. Medium size, medium early. Grown from No. 13392.

PHASEOLUS ANGULARIS. **Adzuki bean.**

17319. Medium size, medium early. Grown from No. 13391.

17320. Late, large. Grown from No. 13405.

17321. Late, large. Grown from No. 13386.

17322. Late, large. Grown from No. 13384.

17323. Late, medium large. Grown from No. 6417.

PHASEOLUS sp.

17324. Earlier than No. 17323, small. Grown from No. 6418.

PHASEOLUS ANGULARIS. **Adzuki bean.**

17325. Late, medium large. Grown from No. 8487.

PHASEOLUS RADIATUS. **Mung bean.**

17326. Smaller than the average, quite late; not promising. Grown from No. 3868.

17327 to 17436. VIGNA UNGUICULATA. **Cowpea.**

From Arlington Farm, Virginia. Crop of 1905.

17327. Black and white mottled.

17328. *Chinese Red.* Grown from Agrost. No. 979–3.

17329. *Chinese Browneye.* Grown from Agrost. No. 980–3.

17330. *Chinese Whippoorwill.* Grown from Agrost. No. 985–3.

17331. *Downs Early Ripener.* Grown from Agrost. No. 1090–2.

17332. Grown from S. P. I. No. 8354.

17333. Grown from S. P. I. No. 6431.

17334. Grown from Agrost. No. 1204–1a–1a.

17335. *Extra Early Blackeye.* Grown from Agrost. No. 1232–3 or S. P. I. No. 13456.

17336. *Early Black.* Grown from Agrost. No. 1233–1c–1b.

17337. *Early Black.* Grown from Agrost. No. 1233–1a–1a.

17338. *California Blackeye.* Grown from Agrost. No. 1231–3 or S. P. I. No. 13457.

17339. *Southdown Mottled.* Grown from Agrost. No. 1221–3.

17340. *Clay.* Grown from Agrost. No. 1255–3 or S. P. I. No. 13458.

17327 to 17436—Continued.

17341. *Browneye.* Grown from Agrost. No. 1208–3.

17342. *Taylor.* Grown from Agrost. No. 1248–3 or S. P. I. No. 13476.

17343. *Early Black.* Grown from Agrost. No. 1233–3.

17344. *Unknown.* Grown from Agrost. No. 1251–3 or S. P. I. No. 13468.

17345. *Warren's New Hybrid.* Grown from Agrost. No. 1288–3 or S. P. I. No. 13471.

17346. *Large Blackeye.* Grown from Agrost. No. 1224–3 or S. P. I. No. 13455.

17347. Grown from Agrost. No. 1204–1d–1b.

17348. *Browneye Crowder.* Grown from Agrost. No. 1209–2.

17349. *Whippoorwill.* Grown from Agrost. No. 1269–2 or S. P. I. No. 13475.

17350. *Red Ripper.* Grown from Agrost. No. 1275–3.

17351. *Clay.* Grown from Agrost. No. 1255–1a–1a.

17352. *Warren's Extra Early.* Grown from Agrost. No. 1218–3.

17353. *Unknown.* Grown from Agrost. No. 1251–1a–1a.

17354. *Old Man.* Grown from Agrost. No. 1219–3.

17355. *Large Blackeye.* Grown from Agrost. No. 1224–1c–1.

17356. *Unknown.* Grown from Agrost. No. 1251–1a–1b.

17357. Grown from Agrost. No. 1261–1c–1b.

17358. *Clay.* Grown from Agrost. No. 1255–1c–1a.

17359. *Lady,* broad whitish. Grown from Agrost. No. 1246–1b–1.

17360. Grown from Agrost. No. 1261–1a–1a.

17361. *Red Ripper.* Grown from Agrost. No. 1257–3.

17362. *Large Blackeye.* Grown from Agrost. No. 1224–1a–1a.

17363. *White Crowder × Whippoorwill.* Grown from Agrost. No. 1216–2.

17364. *Taylor.* Grown from Agrost. No. 1248–1a–1a.

17365. *Red Yellow-Hull.* Grown from Agrost. No. 1278–3.

17366. *Blackeye* (white giant). Grown from Agrost. No. 1210–3.

17367. *Iron.* Grown from Agrost. No. 1247–3.

17368. *Taylor.* Grown from Agrost. No. 1248–1c–1b.

17369. *Red Mauve* selection. Grown from Agrost. No. 1479–1a–1.

17370. *Brown Crowder.* Grown from Agrost. No. 1490–2.

17371. *Small Whippoorwill Crowder.* Grown from Agrost. No. 1490½–2.

17372. *Wight Black Crowder.* Grown from Agrost. No. 1496–2.

17373. *Delicious Large Lady.* Grown from Agrost. No. 1486–2.

17374. *Red Whippoorwill.* Grown from Agrost. No. 1596–1.

17375. *Jhunga,* large white. Grown from Agrost. No. 1620–1G.

17376. *Chauli,* white. Grown from Agrost. No. 1632–1.

17377. *Choli,* small red. Grown from Agrost. No. 1636–1G.

17378. *Bhadela,* red. Grown from Agrost. No. 1629–1.

17379. *Bhadela,* red. Grown from Agrost. No. 1629–1G.

17380. *Barbati,* large red. Grown from Agrost. No. 1625–1G.

17381. *Choli,* small red. Grown from Agrost. No. 1636–1.

17327 to 17436—Continued.

17382. *Barbati,* large red. Grown from Agrost. No. 1625–1.

17383. *Clay,* from *Melear.* Grown from Agrost. No. 17778–1.

17384. Selection from hybrid *Black* × *Iron.* Grown from Agrost. No. 2638.

17385. Selection from hybrid *Black* × *Iron.* Grown from Agrost. No. 2637.

17386. *Sixty-Day.* Grown from Agrost. No. 2649.

17387. *Sixty-Day.* Grown from Agrost. No. 2651.

17388. *Lady-Finger.* Grown from Agrost. No. 2630.

17389. Selection from hybrid *Black* × *Iron.* Grown from Agrost. No. 2639.

17390. *Grayeye.* Grown from Agrost. No. 2631.

17391. Selection from *Clay.* Grown from Agrost. No. 2634.

17392. *Powell's Early Prolific.* Grown from Agrost. No. 2643.

17393. *Red Crowder.* Grown from Agrost. No. 2642.

17394. *Yellow Sugar Crowder.* Grown from Agrost. No. 2645.

17395. Selection from *Clay.* Grown from Agrost. No. 2633.

17396. Selection from *Iron.* Grown from Agrost. No. 2636.

17397. Selection from *Iron.* Grown from Agrost. No. 2635.

17398. *Browneye Crowder.* Grown from Agrost. No. 2641.

17399. *Whittle.* Grown from Agrost. No. 2644.

17400. Selection from second hybrid *Brown* × *Iron.* Grown from Agrost. No. 2640.

17401. *Rice, Long Lady.* Grown from Agrost. No. 1954–1.

17402. *Michigan Favorite.* Grown from Agrost. No. 1991–1.

17403. *New Era.* Grown from Agrost. No. 1936–1.

17404. *Brown Coffee.* Grown from Agrost. No. 1985–1G.

17405. Pinkish tan selection from *Steckler's Improved.* Grown from Agrost. No. 1935–c.

17406. *Michigan Favorite.* Grown from Agrost. No. 1991.

17407. *Steckler's Improved.* Grown from Agrost. No. 1935–1G.

17408. *Whippoorwill* × *Lady.* Grown from Agrost. No. 2027–1.

17409. *Whippoorwill Saddleback.* Grown from Agrost. No. 2025–1.

17410. *Black* × *Blackeye.* Grown from Agrost. No. 2021–1.

17411. Selection from *New Era.* Grown from Agrost. No. 2020–1.

17412. *Speckled Java.* Grown from Agrost. No. 2009–1.

17413. *Calico.* Grown from Agrost. No. 2005–1.

17414. *Coffee.* Grown from Agrost. No. 2008–1.

17415. *Conch.* Grown from Agrost. No. 2013–1.

17416. *Red Whippoorwill.* Grown from Agrost. No. 2003–1.

17417. *Extra Early Blackeye* × *Black.* Grown from Agrost. No. 2018–1.

17418. *Holstein.* Grown from Agrost. No. 2014–1.

17419. *Little Iron.* Grown from Agrost. No. 2006–1.

17420. *Black-Eyed Lady.* Grown from Agrost. No. 2004–1.

17421. Grown from Agrost. No. 2023–1 from the Arkansas Experiment Station.

17422. *Warren's Extra Early* × *Sugar Crowder.* Grown from Agrost. No. 2022–1.

17327 to 17436—Continued.

17423. *Iron Mountain.* Grown from Agrost. No. 2017-1.

17424. *Extra Early Blackeye × Black.* Grown from Agrost. No. 2019-1.

17425. *Watson's Hybrid.* Grown from Agrost. No. 2007-1.

17426. *Mount Olive.* Grown from Agrost. No. 2011-1.

17427. *Sport.* Grown from Agrost. No. 2024-1.

17428. *Red Crowder.* Grown from Agrost. No. 2012-1.

17429. Grown from Agrost. No. 2029-1 from the Arkansas Experiment Station.

17430. *Iron.* Grown from Agrost. No. 2136.

17431. *Iron.* Grown from Agrost. No. 2310.

17432. *Michigan Favorite.* Grown from Agrost. No. 2309.

17433. *Iron.* Grown from Agrost. No. 2217.

17434. *Iron.* Grown from Agrost. No. 2386.

17435. *Iron.* Grown from Agrost. No. 2260.

17436. *Iron.* Grown from Agrost. No. 2387.

17437. AGAVE RIGIDA SISALANA. **Sisal.**

From Santiago de las Vegas and Havana, Cuba. Received at the Porto Rico Agricultural Experiment Station, Mayaguez, P. R., May 8, 1906.

"Suckers and rooted bulbils collected from plants growing without cultivation in the vicinity of Havana and Santiago de las Vegas." (*Dewey.*)

17438 to 17448.

From Floral Park, Long Island, N. Y. Received through Mr. John Lewis Childs, February 2, 1906.

17438. STREPTOSOLEN AMABILIS MAGNIFICA.

17439. RICHARDIA FRAGRANS. **Calla.**

17440. RICHARDIA CHILDSIANA. **Calla.**

17441. RICHARDIA AFRICANA NANA COMPACTA. **Little gem calla.**

17442. RICHARDIA PRAECOX. **Calla.**

17443. RICHARDIA AETHIOPICA GIGANTEA. **Calla.**

17444. RICHARDIA ELLIOTTIANA. **Golden calla.**

17445. RICHARDIA ALBO-MACULATA. **Spotted calla.**

17446. RICHARDIA HASTATA. **Yellow calla.**

17447. RICHARDIA AURATA. **Calla.**

17448. RICHARDIA RHEMANNI. **Rose calla.**

17449. MEDICAGO SATIVA. **Alfalfa.**

From Chicago, Ill. Received through the A. Dickinson Company, January 30, 1906.

Utah-grown alfalfa seed.

17450. AVENA SATIVA. **Oat.**

From Richmond, Va. Received through T. W. Wood & Sons, February 1, 1906.

Fall-sown *Appler Rustproof.*

17451. AVENA SATIVA. **Oat.**

From Richmond, Va. Received through T. W. Wood & Sons, January 27, 1906.

Burt.

17452. AVENA SATIVA. **Oat.**

From Augusta, Ga. Received through the N. L. Willet Seed Company, February 1, 1906.

Fall-sown *Appler Rustproof.*

17453 to 17461. XANTHOSOMA spp. **Yautia.**

From Ceylon. Presented by Mr. H. F. Macmillan. Received February 2, 1906.

Roots as follows:

17453.	*Kalu Ala.*	**17458.**	*Malanga Amarillo.*
17454.	*Malanga Blanca.*	**17459.**	*Garendi Kaudala.*
17455.	*Dehi Ala.*	**17460.**	*Desa Ala.*
17456.	*Nianie Islenio.*	**17461.**	*Kelu Kaudala.*
17457.	*Kaudala.*		

17462 and 17463. XANTHOSOMA spp. **Yautia.**

From Cocoanut Grove, Fla. Received through Mr. O. W. Barrett, February 5, 1906.

Honduras varieties.

17464. AVENA SATIVA. **Oat.**

From Yancey, Ga. Received through Mr. H. Yancey, jr., September 28, 1904.

Pure *Appler Rustproof* oats to be planted for the purpose of growing pure stock seed. Hand selected from S. P. I. No. 11722, February, 1906.

17465. NICOTIANA TABACUM. **Tobacco.**

From Portici, Naples, Italy. Presented by Prof. O. Comes. Received May 16, 1906.

Latakia.

17466 to 17470.

From North China. Received through Mr. F. N. Meyer, February 6, 1906.

Plants and cuttings, as follows:

17466. CAREX STENOPHYLLA. **Sedge.**

From Marble Pagoda grounds, Peking. "(Nos. 70b and 70c.) A most wonderful 'grass' for lawns. It will save a tremendous lot of drudgery if we can establish this in the United States, for, according to the gardener of the German legation grounds, it is the only 'grass' in dry North China that keeps green all summer notwithstanding droughts. It grows on the rockiest and poorest of soils and never needs mowing. I consider it of the utmost importance, especially for those regions of the United States where there is but a slight amount of precipitation." (*Meyer.*)

17467. VITIS sp. **Grape.**

From Tientsin. "(Nos. 59, 60, and 61.) A pale purple grape ripening in early September; produces large bunches and is a heavy bearer. Taste of the berries a trifle watery, but otherwise a good grape. Can be kept in cold storage for a whole year. The vines are buried during the winter months." (*Meyer.*)

17466 to 17470—Continued.

17468. VITIS sp. **Grape.**

From Tientsin. "(Nos. 62, 63, 64. and 65.) A dark purple grape, with somewhat smaller berries than No. 59 (S. P. I. No. 17467); otherwise the same description applies to it." (*Meyer.*)

17469. ROSA sp. **Rose.**

From Peking. "(Nos. 67 and 68.) A semidouble, yellow rose frequently met in the gardens here. Is a very thrifty grower and able to withstand long droughts. The straight young shoots grow from 5 to 8 feet in height." (*Meyer.*)

17470. AMYGDALUS PERSICA. **Peach.**

From Peking. "(No. 69.) Bud sticks from the tree in the grounds of the German legation in Peking, from which one bag of seeds was sent under No. 9a (S. P. I. No. 18262)." (*Meyer.*)

17471. TRITICUM DURUM. **Macaroni wheat.**

From Littleton, Colo. Received through Mr. James B. Mills, February 7, 1906.

Kubanka.

17472. CRATAEGUS sp. **Hawthorn.**

From Shanghai, China. Presented by Rev. J. M. W. Farnham, D. D., of the Chinese Tract Society. Received February 8, 1906.

17473. RUBUS sp. **Himalaya blackberry.**

From Albany, Oreg. Received through Mr. Albert Brownlow, February, 1906.

Himalaya (synonym, *Himalaya Giant*) blackberry. "This blackberry was grown by Mr. Luther Burbank from seeds received by him about 1889 or 1890 from a friend, who stated that they had been gathered high up on the Himalaya Mountains. It was sparingly disseminated by Mr. Burbank on the Pacific coast about 1894. It is reported to be a very vigorous, semitrailing variety, somewhat closely resembling the 'Evergreen' blackberry of Oregon, but, unlike that sort, shedding its leaves in autumn. In western Washington and Oregon it has been found entirely hardy and in most soils yields very large crops of fruit of good size and quality, ripening earlier than the 'Evergreen.' Although not strictly a trailer, its recumbent habit and very strong growth render a trellis advisable in its culture.

"It is distributed at this time with a view to determining its relative hardiness and its adaptability to culture in sections east of the Rocky Mountains." (*Taylor.*)

17474. PISTACIA VERA. **Pistache.**

From Khost, India. Presented by Mr. Philip Parker, of the Indian Irrigation Service, through J. S. Davis, esq., executive engineer, Bannu, Karum Valley Irrigation Project. Received through Mr. W. T. Swingle, May 21, 1906.

"An unusually interesting deep green variety of the wild nut." (*Swingle.*)

17475. ANDROPOGON SORGHUM. **Kafir corn.**

From Lawrence, Kans. Received through F. Barteldes & Co., April 3, 1906.

17476. MEDICAGO SATIVA. **Alfalfa.**

From Brady, Nebr.

Seed from a single plant. Selected by J. M. Westgate, of this Department, September 28, 1905, in a field belonging to H. K. Peckham, on account of size, drought resistance, hardiness, white flowers, and seeding qualities.

17477. PHYSALIS FRANCHETI. **Ground cherry.**

From Samarkand, Turkestan. Received through Mr. Frank Benton, February 9, 1906.

"(No. 25.) Similar to, if not identical with, No. 18 (S. P. I. 15931) from Caucasus. Pods same color, bright crimson, but longer and more pointed. Fruit seems better in quality and is sold in native bazaars. No. 18 is also eaten sometimes, but is more acrid than No. 25." (*Benton.*)

17478. CUCUMIS MELO. **Winter muskmelon.**

From Erivan, southern Caucasus, Russia. Received through Mr. Frank Benton, January 26, 1906.

"(No. 20.) Locally known as *Dutma.* Medium-sized yellow melon with light green flesh. Good quality. Keeps into the winter if hung up in a cool room. A gardener in Erivan states that it is their practice to cover the fruits, when partly grown, with earth, which is left until autumn." (*Benton.*)

17479. ELAEAGNUS sp. **Oleaster.**

From Wagarschapat, southern Caucasus, Russia. Received through Mr. Frank Benton, January 26, 1906.

"(No. 21.) Seeds of an edible fruit known in Armenian as '*Pschad,*' which grows on a good-sized tree. The flesh of the fruit is dry and mealy, tastes something like that of a banana, but is more acid. Much sought after by children. Probably an Elaeagnus. Collected in October, 1905." (*Benton.*)

17480. CUCUMIS MELO. **Winter muskmelon.**

From Old Samarkand, Turkestan. Received through Mr. Frank Benton, January 22, 1906.

"(No. 22.) Seed of a winter muskmelon purchased in Sart Bazaar at Old Samarkand, Turkestan, in December, 1905. Rather small, oval, yellow melon with dark bronze shading. Flesh light green or yellowish-green. Quality medium. Keeps until midwinter if hung up in a cool room. Ripens when brought into a warm room." (*Benton.*)

17481. CUCUMIS MELO. **Winter muskmelon.**

From Samarkand, Turkestan. Received through Mr. Frank Benton, January 26, 1906.

"(No. 23.) Seed of a winter muskmelon purchased in Samarkand in December, 1905. Large, oblong, yellow melon, with thick, light green flesh, fair quality; weight about 10 pounds. Keeps until midwinter if hung in a cool room. Some bronze shading on outside; may be only a large specimen of No. 22 (S. P. I. No. 17480)." (*Benton.*)

17482. CUCUMIS MELO. **Winter muskmelon.**

From Samarkand, Turkestan. Received through Mr. Frank Benton, January 26, 1906.

"(No. 24.) Rather large, slightly oval in form, yellow outside with heavy bronze shading; flesh light green, good quality. May be only a better specimen of Nos. 22 and 23 (S. P. I. Nos. 17480 and 17481)." (*Benton.*)

17483 to 17487.

From Hamilton, Canada. Received through John A. Bruce & Co., February 12, 1906.

17483. PISUM ARVENSE. **Field pea.**

Golden Vine.

17484. LATHYRUS SATIVUS. **Bitter vetch.**

Grass Pea.

17483 to 17487—Continued.

17485. PISUM ARVENSE. **Field pea.**

White Marrowfat.

17486. PISUM ARVENSE. **Field pea.**

Blackeye Marrowfat.

17487. PISUM ARVENSE. **Field pea.**

Blue Prussian.

17488. PHALARIS CANARIENSIS. **Canary grass.**

From San Jose, Cal. Received through Braslan Seed Growers' Company, February 10, 1906.

17489. AGROPYRON TENERUM. **Slender wheat-grass.**

From Brandon, Manitoba. Received through A. E. McKenzie & Co., February 10, 1906.

17490. ANDROPOGON SORGHUM. **Sorghum.**

From Tyro, Kans. Received through Mr. G. R. Wheeler, February 12, 1906.

Simmon's Cane.

17491. MELILOTUS ALBA. **Sweet clover.**

From Beloit, Wis. Received through Mr. I. M. Buell, February 12, 1906.

17492 and 17493. VIGNA UNGUICULATA. **Cowpea.**

From Arlington Farm, Virginia. Crop of 1905.

17492. Grown from Abyssinian seed, S. P. I. No. 11074.

17493. Grown from Abyssinian seed, S. P. I. No. 11091.

17494 and 17495.

From Auckland, New Zealand. Received through the Auckland Department of Agriculture, February 12, 1906.

17494. DANTHONIA SEMIANNULARIS. **Wallaby grass.**

17495. MICROLAENA STIPOIDES. **New Zealand meadow rice-grass.**

17496 and 17497.

From Lausanne, Switzerland. Presented by Prof. G. Martinet, director, Établissement Fédéral d'Essais et de Controle de Semences à Lausanne, February 12, 1906.

17496. VICIA GLABRESCENS. **Vetch.**

17497. LATHYRUS HETEROPHYLLUS.

17498. KICKXIA ELASTICA.

From Victoria, Kamerun, German West Africa. Received through the Victoria Agricultural Experiment Station, January 26, 1906.

17499 to 17504. NICOTIANA spp. **Tobacco.**

From Portici, Italy. Presented by Prof. O. Comes. Received February 9, 1906.

"A collection of varieties of tobacco forming part of the extensive collection made by Professor Comes, author of various works on tobacco, and especially the work enti-

17499 to 17504—Continued.

tled 'The Races of Tobacco.' Imported for breeding experiments in connection with a search for a disease-resistant strain in North Carolina." (*Fairchild.*)

17499. NICOTIANA TABACUM FRUTICOSA.

Karchiaku.

17500. NICOTIANA TABACUM FRUTICOSA.

Doniaku.

17501. NICOTIANA ALATA PERSICA.

Schiraz.

17502. NICOTIANA RUSTICA TEXANA.

Calcutta.

17503. NICOTIANA RUSTICA BRASILIA.

Dzjouchin Rhau.

17504. NICOTIANA RUSTICA BRASILIA.

Veilchen.

17505 and 17506. CITRUS AURANTIUM. **Orange.**

From Shanghai, China. Presented by Rev. J. M. W. Farnham, D. D. Received February 8, 1906.

Orange seeds, as follows:

17505. From Swatow, China. "A very fine loose-skinned variety; lobes separate easily." (*Farnham.*)

17506. From Canton, China. "A better variety of orange than I have ever eaten in the United States or Europe. Close skin, and lobes not separable." (*Farnham.*)

17507. CITRUS AURANTIUM. **Orange.**

From Algiers, Algeria. Presented by Dr. L. Trabut, government botanist. Received February 8, 1906.

"Seeds of the famous orange *Blida*, which, according to Doctor Trabut's label, is an early variety, having large, sweet fruits and reproducing by seeds. The *Blida* orange is one of the best grown in northern Algeria and, as I understand, these seeds are from selected fruits of this variety." (*Swingle.*)

17508. TRIFOLIUM PRATENSE. **Red clover.**

From Lausanne, Switzerland. Presented by Prof. G. Martinet, director, Etablissement Federal D'Essais et de Controle de Semences a Lausanne. Received February 12, 1906.

Selection with yellow grains.

17509. BETA VULGARIS. **Sugar beet.**

From Fairfield, Wash. Received through Mr. E. H. Morrison. Crop of 1905.

Kleinwanzleben.

17510. QUERCUS CUSPIDATA.

From Yokohama, Japan. Received through Mr. F. N. Meyer from the Yokohama Nursery Company, February 15, 1906.

This is an evergreen oak much used in Japan for hedges, for which it seems admirably suited. Its acorns, although of small size, are of very sweet taste when baked like chestnuts, and when boiled or roasted are regularly sold in Japan for food; not hardy in the northern States.

17511. SECHIUM EDULE. **Chayote.**

From Biloxi, Miss. Presented by Mr. Aristide Hopkins. Received February 15, 1906.

Fruits of a green variety.

17512. PHASEOLUS RADIATUS. **Mung bean.**

From De Quincy, La. Received through Dr. S. A. Knapp, February 16, 1906.

Grown from S. P. I. No. 10527.

17513. ANDROPOGON SORGHUM. **Milo.**

From Memphis, Tenn. Received through Mr. J. E. Bradley, February 16, 1906.

Dwarf.

17514 and 17515.

From Buitenzorg, Java. Presented by Dr. M. Treub, director of the Botanical Gardens. Received February 16, 1906.

Seeds, as follows:

17514. GARCINIA MANGOSTANA. **Mangosteen.**

17515. NEPHELIUM LAPPACEUM. **Rambutan.**

Native of south India and Malay islands and furnishes a fruit similar to the Litchi, namely, the *Rambutan* or *Ramboostan* fruit. All species of Nephelium seem to require rather a moist, mild, forest clime than great atmospheric heat.

The fruit is of a bright red color, about 2 inches long, of an oval form, and slightly flattened, and covered with long, soft, fleshy spines or thick hair. Like the other Nepheliums it contains a pleasant acidulous pulp, very grateful in tropical countries.

17516. ZEA MAYS. **Corn.**

From St. Anthony Park, St. Paul, Minn. Received through the Minnesota Agricultural Experiment Station, February, 1906.

Crosby. Grown in 1905 from S. P. I. No. 13570; selected to ears of plump form with 14 rows and over.

17517. ZEA MAYS. **Corn.**

From Simsbury, Conn. Received through Mr. A. R. Dayton, February, 1906.

Crosby. Grown in 1905 from S. P. I. No. 13570; selected from two-eared stalks.

17518. ZEA MAYS. **Corn.**

From Simsbury, Conn. Received through Mr. A. R. Dayton, February, 1906.

Crosby. Grown in 1905 from S. P. I. No. 13570; selected from compact plants with ears low on stalk.

17519. VIGNA UNGUICULATA. **Cowpea.**

From Richmond, Va. Received through T. W. Wood & Sons, February 16, 1906.

Red Carolina. "One of the surest cropping of cowpeas, yielding well in both wet and dry seasons. The vines are not as long as *Black* and *Red Ripper*, but are thicker and bunchier, completely covering the ground, and can be more easily cut and cured. Does well on nearly all classes of soils, and better than any other sort on stiff clay soils. The long pods contain 18 to 20 peas, and are easier and less expensive to pick than the short-podded sorts. We recommend it strongly, believing that our growers will find in it distinct advantages over other kinds." (*Wood & Sons.*)

17520. GLYCINE HISPIDA. **Soy bean.**

From Richmond, Va. Received through T. W. Wood & Sons, February 16, 1906.

Hollybrook Early. "A particularly valuable strain of soy beans, which matures its crop three weeks earlier than the *Mammoth Yellow* soy, and is consequently better adapted for planting in sections north of Virginia, or for planting late in order to make a crop of shelled beans. The yield from the *Hollybrook Early* soy is very nearly equal to that of the *Mammoth Yellow*, and they are sure to make a crop of beans. The *Mammoth Yellow* soy requires the full growing season to mature its crop, and frequently an early frost will cut short the yield of the crop of beans. There is no such danger with *Hollybrook Early* soys, and they will prove to be a distinct and valuable acquisition." (*Wood & Sons.*)

17521. PASSIFLORA QUADRANGULARIS. **Granadilla.**

From Juarez, Chihuahua, Mexico. Presented by Mr. Elmer Stearns. Received February 15, 1906.

17522. CUCUMIS MELO. **Winter muskmelon.**

From Ispahan, Persia. Received through Mr. Frank Benton, February 14, 1906.

"Bears transportation long distances over bad roads; good quality, very juicy, fairly sweet. Long, oval, light yellow or straw colored outside with rather fine brown netting. Rind thin; flesh light straw colored, with a watery or semitransparent appearance. Ispahan is on a great plateau, 5,400 feet above sea level." (*Benton.*)

17523 and 17524.

From Bagdad, Turkey. Presented by Hon. Rudolph Hurner, United States vice-consul. Received February 8, 1906.

17523. ZEA MAYS. **Corn.**

"*Edreh Scham*" (*Damascus Edreh*). Small, yellow flint corn.

17524. ANDROPOGON SORGHUM. **Sorghum.**

"*Edreh Trak*" (or *Irak*).

17525 to 17527.

From Geneva, Idaho. Received through Mr. F. W. Boehme, February, 1906.

17525. HORDEUM VULGARE. **Barley.**

Beardless.

17526. AVENA SATIVA. **Oat.**

Swedish Select.

17527. AVENA SATIVA. **Oat.**

Sixty-Day.

17528 and 17529.

From Niu-chwang, China. Received from the Chinese magistrate of the Hai-cheng district, through Mr. Thomas Sammons, United States consul-general at Niu-chwang, February 12, 1906.

17528. CANNABIS SATIVA. **Hemp.**

"Manchurian fine thread hemp seed." (*Sammons.*)

17529. ABUTILON AVICENNAE. **China jute.**

"Manchurian coarse rope hemp seed." (*Sammons.*)

17530 to 17533. ARACHIS HYPOGAEA. **Peanut.**

From Mikindani, German East Africa. Presented by Prof. Dr. A. Zimmermann, Biologisch Landwirtschaftliches Institut, Amani, German East Africa. Received February 16, 1906.

No varietal names received.

17534. DOLICHOS ATROPURPUREUS.

From Waterloo, Kans. Received through Mr. J. W. Riggs, February 10, 1906.

17535 to 17537. ANDROPOGON SORGHUM. **Sorghum.**

From Lyallpur, India. Received through Mr. Theodore C. Maller, of Amritsar, India, February 16, 1906.

Sorghum seed, as follows:

17535. *White Juar of Lyallpur.*

17536. *Sweet Juar of Lyallpur.*

17537. *Red Juar of Lyallpur.*

17538 to 17687. ANDROPOGON SORGHUM. **Sorghum.**

From Chillicothe, Tex.

A collection of sorghums grown in 1905 on the Department's experimental farm at Chillicothe, as follows:

17538. *Planter's Friend.* Grown from Agrost. No. 1697, from New South Wales, Australia.

17539. *Planter's Friend.* Grown from Agrost. No. 2119, from Queensland, Australia.

17540. "*S. saccharatum.*" Grown from Agrost. No. 1605, from Sydney, Australia.

17541. *Black-Seeded.* Grown from Agrost. No. 1656, from New South Wales, Australia.

17542. *Black-Seeded.* Grown from Agrost. No. 1694, from New South Wales, Australia.

17543. *Amber.* Grown from Agrost. No. 1695, from New South Wales, Australia.

17544. *Dwarf Amber.* Grown from Agrost. No. 2118, from Queensland, Australia.

17545. *Undendibule.* Grown from Agrost. No. 1752, from Victoria, Australia; first selection.

17546. *Undendibule.* Grown from Agrost. No. 1752, from Victoria, Australia; second selection.

17547. *Orange.* Grown from Agrost. No. 1661, from New South Wales, Australia.

17548. *Orange.* Grown from Agrost. No. 1696, from New South Wales, Australia.

17549. *Orange.* Grown from Agrost. No. 2095, from Congressional seed distribution; first selection.

17550. *Orange.* Grown from Agrost. No. 2095; second selection.

17551. *Orange.* Grown from Agrost. No. 2125, from Queensland, Australia; first selection.

17552. *Orange.* Grown from Agrost. No. 2125; second selection.

17553. *Texas Gooseneck* (*Texas Seeded "Ribbon Cane"*). Grown from Agrost. No. 1812, from the Texas Seed and Floral Company, Dallas, Tex.

17538 to 17687—Continued.

17554. *Sumac.* Grown from Agrost. No. 1946, from the Tennessee Experiment Station.

17555. *Folger's Early.* Grown from Agrost. No. 2120, from Queensland, Australia.

17556. *Colman.* Grown from Agrost. No. 2121, from Queensland, Australia.

17557. *Collier.* Grown from Agrost. No. 2124, from Queensland, Australia; first selection.

17558. *Collier.* Grown from Agrost. No. 2124; second selection.

17559. *Russian Sugar.* Grown from Agrost. No. 1581, from Russia.

17560. *Austrian Sugar.* Grown from Agrost. No. 1607, from Vienna.

17561. *Black Sorghum.* Grown from Agrost. No. 1811, from Barbados, West Indies.

17562. *Yellow Milo.* Grown from Agrost. No. 1753, from Victoria, Australia.

17563. *Yellow Milo.* Selected pendent heads grown from Agrost. No. 2522, from Thorburn & Co., New York, N. Y.

17564. *Yellow Milo.* Selected erect heads grown from Agrost. No. 2522.

17565. *Yellow Milo.* Grown from Agrost. No. 2090, from Chillicothe, Tex.

17566. *Red Kafir.* Grown from Agrost. No. 1751, from Victoria, Australia.

17567. *Red Kafir.* Grown from Agrost. No. 2116, from Queensland, Australia.

17568. *Black-Hulled White Kafir.* Grown from Agrost. No. 1749, from Victoria, Australia.

17569. *Black-Hulled White Kafir.* Grown from Agrost. No. 1993, from the Iowa Seed Company, Des Moines, Iowa.

17570. *White Milo.* Grown from Agrost. No. 2115, from Queensland, Australia.

17571. *White-Hulled White Kafir.* Grown from Agrost. No. 2122, from Queensland, Australia.

17572. *Black-Hulled White Kafir.* Grown from Agrost. No. 1754, from Victoria, Australia.

17573. *Dhavla* (A). Grown from S. P. I. No. 14500.

17574. *Kalbondi.* Grown from S. P. I. No. 14508.

17575. *Gare Nasik.* Grown from S. P. I. No. 14516.

17576. *Bile Jura.* Grown from S. P. I. No. 14524.

17577. *Meldani.* Grown from S. P. I. No. 14535.

17578. *Kondi.* Grown from S. P. I. No. 14544.

17579. *Nadyal.* Grown from S. P. I. No. 14583.

17580. *Juari.* Grown from S. P. I. No. 14584.

17581. *White Dumraon.* Grown from S. P. I. No. 14585.

17582. *Gumeri.* Grown from S. P. I. No. 14586; first selection.

17583. *Gumeri.* Grown from S. P. I. No. 14586; second selection.

17584. *Dukri.* Grown from S. P. I. No. 14587.

17585. *Durga.* Grown from S. P. I. No. 14588.

17538 to 17687—Continued.

17586. *Bana of Jalaon.* Grown from S. P. I. No. 14589.

17587. *Bhannu of Jhansi.* Grown from S. P. I. No. 14590.

17588. *Lal.* Grown from S. P. I. No. 14591.

17589. *Doliya.* Grown from S. P. I. No. 14593; first selection.

17590. *Doliya.* Grown from S. P. I. No. 14593; second selection.

17591. *Bania.* Grown from S. P. I. No. 14594.

17592. *Laliya.* Grown from S. P. I. No. 14595.

17593. *Kombrai.* Grown from S. P. I. No. 14597.

17594. *Pyaria Iksari Banda.* Grown from S. P. I. No. 14598.

17595. *Iksari Banda.* Grown from S. P. I. No. 14599.

17596. *Pyaria.* Grown from S. P. I. No. 14600.

17597. *Alapuri.* Grown from S. P. I. No. 14602.

17598. *Dulari.* Grown from S. P. I. No. 14603.

17599. *Dugadia Zard.* Grown from S. P. I. No. 14604.

17600. *Ikdani.* Grown from S. P. I. No. 14605.

17601. *Purbi Magha.* Grown from S. P. I. No. 14606.

17602. *Country White.* Grown from S. P. I. No. 14607.

17603. *Dugadia Safed.* Grown from S. P. I. No. 14608; first selection.

17604. *Dugadia Safed.* Grown from S. P. I. No. 14608; second selection.

17605. *Jogia.* Grown from S. P. I. No. 14609.

17606. *Domni.* Grown from S. P. I. No. 14610.

17607. *Chatka.* Grown from S. P. I. No. 14611.

17608. *Bangra.* Grown from S. P. I. No. 14612.

17609. *Lallu.* Grown from S. P. I. No. 14613; first selection.

17610. *Lallu.* Grown from S. P. I. No. 14613; second selection.

17611. *Purbi Murabad.* Grown from S. P. I. No. 14617.

17612. *Deshi.* Grown from S. P. I. No. 14618.

17613. *Ganga Jamni.* Grown from S. P. I. No. 14619.

17614. *Bannia Dadri.* Grown from S. P. I. No. 14622.

17615. *Red of Ajangarh.* Grown from S. P. I. No. 14626; first selection.

17616. *Red of Ajangarh.* Grown from S. P. I. No. 14626; second selection.

17617. *Bannia.* Grown from S. P. I. No. 14627.

17618. *Jhangaria.* Grown from S. P. I. No. 14631.

17619. *Palarhia.* Grown from S. P. I. No. 14634.

17620. *Ganga Jali.* Grown from S. P. I. No. 14641.

17621. *Lohor.* Grown from S. P. I. No. 14647.

17622. *Shalu.* Grown from S. P. I. No. 14666; first selection.

17623. *Shalu.* Grown from S. P. I. No. 14666; second selection.

17624. *Makchandri.* Grown from S. P. I. No. 14667.

17625. *Holgi.* Grown from S. P. I. No. 14668.

17626. *Hundi.* Grown from S. P. I. No. 14669.

17627. *Kagi Moti.* Grown from S. P. I. No. 14671.

17538 to 17687—Continued.

17628. *Kalbondi.* Grown from S. P. I. No. 14673.
17629. *Duhar Maski.* Grown from S. P. I. No. 14674.
17630. *Bendri.* Grown from S. P. I. No. 14675; first selection.
17631. *Bendri.* Grown from S. P. I. No. 14675; second selection.
17632. *Guldhavi.* Grown from S. P. I. No. 14676.
17633. *Lakdi.* Grown from S. P. I. No. 14677.
17634. *Shalu.* Grown from S. P. I. No. 14678.
17635. *Gola.* Grown from S. P. I. No. 14680.
17636. *Khondi Chandor.* Grown from S. P. I. No. 14684; first selection.
17637. *Khondi Chandor.* Grown from S. P. I. No. 14684; second selection.
17638. *Khondi Chandor.* Grown from S. P. I. No. 14684; third selection.
17639. *Dadar.* Grown from S. P. I. No. 14687.
17640. *Khonde Malegaon.* Grown from S. P. I. No. 14688.
17641. *Shalu.* Grown from S. P. I. No. 14689.
17642. *Dagdi.* Grown from S. P. I. No. 14691.
17643. *Shalu.* Grown from S. P. I. No. 14694.
17644. *Hundi.* Grown from S. P. I. No. 14697.
17645. *Waradi Juar.* Grown from S. P. I. No. 14699.
17646. *Hundi.* Grown from S. P. I. No. 14700.
17647. *Jondhala.* Grown from S. P. I. No. 14701; first selection.
17648. *Jondhala.* Grown from S. P. I. No. 14701; second selection
17649. *Maldani.* Grown from S. P. I. No. 14702.
17650. *Tambdi.* Grown from S. P. I. No. 14703.
17651. *Gudadi.* Grown from S. P. I. No. 14704.
17652. *Jagadi.* Grown from S. P. I. No. 14705.
17653. *Dadia.* Grown from S. P. I. No. 14706.
17654. *Fafaria.* Grown from S. P. I. No. 14707.
17655. *Deshi Perio.* Grown from S. P. I. No. 14708.
17656. *Sholapuri.* Grown from S. P. I. No. 14709.
17657. *Ratadia.* Grown from S. P. I. No. 14713; first selection.
17658. *Ratadia.* Grown from S. P. I. No. 14713; second selection.
17659. *Malvan.* Grown from S. P. I. No. 14718.
17660. *Utavli.* Grown from S. P. I. No. 14719.
17661. *Sakar Makar.* Grown from S. P. I. No. 14720.
17662. *Sundhia* (B). Grown from S. P. I. No. 14721.
17663. *Collier.* Grown from S. P. I. No. 14723.
17664. *Raj Hansa.* Grown from S. P. I. No. 14724.
17665. *Imphee.* Grown from S. P. I. No. 14725.
17666. *Motichur.* Grown from S. P. I. No. 14728.
17667. *Rati* (A). Grown from S. P. I. No. 14733.
17668. *Jogadi.* Grown from S. P. I. No. 14734.
17669. *Kempu Poona.* Grown from S. P. I. No. 14742.
17670. *Kempu* (A). Grown from S. P. I. No. 14744.

17538 to 17687—Continued.

17671. *Holgi Gola.* Grown from S. P. I. No. 14749.
17672. *Dudha Mogra.* Grown from S. P. I. No. 14750.
17673. *Tambdi Sholapuri.* Grown from S. P. I. No. 14751.
17674. *Dukri* (B). Grown from S. P. I. No. 14753.
17675. *Holgi Jola.* Grown from S. P. I. No. 14761.
17676. *Chikna.* Grown from S. P. I. No. 14762.
17677. *Maldandi* (A) *Poona.* Grown from S. P. I. No. 14763.
17678. *Kagi.* Grown from S. P. I. No. 14766.
17679. *Darker.* Grown from S. P. I. No. 14767; first selection.
17680. *Darker.* Grown from S. P. I. No. 14767; second selection.
17681. *Darker* (A). Grown from S. P. I. No. 14768.
17682. *Sundhia Juwar* (Poona Farm). Grown from S. P. I. No. 14769.
17683. *Utavli.* Grown from S. P. I. No. 14771.
17684. *Kavli.* Grown from S. P. I. No. 14772.
17685. *Charodi* (Surat Farm). Grown from S. P. I. No. 14773.
17686. *Ameria Sundhia* (Nadiad Farm). Grown from S. P. I. No. 14774.
17687. *Farfaria* (Nadiad Farm). Grown from S. P. I. No. 14775.

17688. ANDROPOGON SORGHUM. **Sorghum.**

From Chillicothe, Tex. Received through Mr. E. J. Randel. Crop of 1905.

Sapling.

17689. ANDROPOGON SORGHUM. **Sorghum.**

From Mecca, Cal. Received through Brauchman Brothers. Crop of 1905.

Durra.

17690. ANDROPOGON SORGHUM. **Sorghum.**

From Mountain View, Okla. Received through Mr. James Cummins. Crop of 1905.

Shallu.

17691. ANDROPOGON SORGHUM. **Giant milo (?).**

From Chillicothe, Tex. Received through Mr. A. B. Conner. Crop of 1905.

Seed of the Giant milo, or possibly a hybrid, collected from plants found growing in several fields.

17692. ZEA MAYS. **Corn.**

From Dallas, Tex. Received through the Texas Seed and Floral Company, February 20, 1906.

Texas Giant Gourd.

17693. VIGNA UNGUICULATA. **Cowpea.**

From Dallas, Tex. Received through the Texas Seed and Floral Company, February 20, 1906.

Cream.

17694. AVENA SATIVA. **Oat.**

From Manhattan, Kans. Received through the Agricultural Experiment Station, February 20, 1906.

Sixty-Day.

17695. ANDROPOGON SORGHUM. **Sorghum.**

From Waterville, Minn. Received through Mr. Seth H. Kenney, February 20, 1906.

Minnesota Early Amber Cane.

17696. PHASEOLUS RADIATUS. **Mung bean.**

From San Jose, Cal. Received through the Braslan Seed Growers Company, February 23, 1906.

17697. VIGNA UNGUICULATA. **Cowpea.**

From Richmond, Va. Received through T. W. Wood & Sons, February 23,1906.

Iron.

17698. MEDICAGO SATIVA. **Alfalfa.**

From Chinook, Mont. Received through Mr. Thomas O'Hanlon, February 21, 1906.

17699. AGROPYRON OCCIDENTALE. **Western wheat-grass.**

From Harlem, Mont. Received through Mr. Thomas M. Everett, February 21, 1906.

17700 and 17701. AVENA SATIVA. **Oat.**

From Richmond, Va. Received through T. W. Wood & Sons, February 23, 1906.

17700. *Appler Rustproof.* **17701.** *Burt.*

17702. ANDROPOGON SORGHUM. **Sorghum.**

From Richmond, Va. Received through T. W. Wood & Sons, February 23, 1906.

Early Amber Cane.

17703. XANTHOSOMA SAGITTIFOLIUM. **Yautia.**

From Port au Paix, Haiti. Received through Mr. George W. Gulding, February 23, 1906.

17704 to 17707. DIOSPYROS KAKI. **Japanese persimmon.**

From Taiku, Korea. Received through Prof. J. G. Jack, of the Arnold Arboretum, Jamaica Plains, Mass., February 26, 1906.

Cuttings of four varieties of seedless Japanese persimmons.

17708. MUSSAENDA FRONDOSA.

From Manila, P. I. Received through Mr. W. S. Lyon, of the Bureau of Agriculture, February 26, 1906.

"A yellow-flowered, ornamental shrub; flowers subtended by single, large, milk-white calycine leaf; very showy." (*Lyon.*)

17709. ORNITHOPUS SATIVUS. **Serradella.**

From Paris, France. Received through Vilmorin-Andrieux & Co., February 26, 1906.

17710 to 17712. ARACHIS HYPOGAEA. **Peanut.**

From Yokohama, Japan. Received through the Yokohama Nursery Company, February 26, 1906.

Seed of three varieties of peanuts grown in Shimosa Province, as follows:

17710. Small variety.

17711. *Hirata;* the best in Japan; large variety.

17712. *Bachigai* (outsider); large variety.

17713 and 17714. COFFEA ARABICA. **Coffee.**

From Harrar, Abyssinia. Received through the Office of Bionomic Investigations, February 26, 1906.

17713. CULTIVATED COFFEE. **17714.** WILD COFFEE.

17715 and 17716. AGAVE spp. **Century plant.**

From Washington, D. C. Received through Mr. L. H. Dewey, February, 1906.

Plants, as follows:

17715. AGAVE LECHEGUILLA.

From Mexico.

17716. AGAVE RIGIDA SISALANA. **Sisal.**

From the Bahama Islands.

17717. PSOPHOCARPUS TETRAGONOLOBUS. **Seguidillas.**

From Manila, P. I. Presented by Mr. W. S. Lyon, of the Bureau of Agriculture. Received February 26 and April 3, 1906.

"The pods if boiled when exceedingly young and tender taste not unlike asparagus. Vigorous climber, fruiting in three months from the seed and annually from a perennial rootstock in warm climates." (*Lyon.*)

17718 and 17719. VITIS VINIFERA. **Grape.**

From Salonica, Turkey. Received through Rev. J. Henry House, February 15, 1906.

Cuttings, as follows:

17718. *White Kapadjulari.* **17719.** *Black Kapadjulari.*

17720. AVENA SATIVA. **Oat.**

From Aberdeen, S. Dak. Received through Mr. Isaac Lincoln, February 28, 1906.

Sixty-Day.

17721. PAPPOPHORUM NIGRICANS.

From Victoria, Australia. Presented by Prof. Hugh Pye, of the Dookie Agricultural College. Received February 21, 1906.

17722. PHASEOLUS RADIATUS. **Mung bean.**

From Terrell, Tex. Received through W. C. Porter & Co., February 28, 1906.

Probably grown from No. 10527.

17723 to 17743.

From China. Received through Mr. F. N. Meyer, March 1, 1906.

A collection of bud sticks, as follows:

17723. PYRUS SINENSIS. **Pear.**

From Matou. "(No. 75.) A fine variety of a melting pear called *Pai li.* This form looks to be different from those sent under Nos. 109 and 120 (S. P. I. No. 16911)." (*Meyer.*)

17724. PYRUS SINENSIS. **Pear.**

From Matou. "(No. 73.) A large variety of the best pear of North China, the so-called Peking pear; in Chinese, *Ya kwam le.* Looks and smells like a quince, but is juicy, melting, and aromatic. May prove to be exceedingly valuable for breeding purposes. The trees grow far more spread out than pears generally do, so they must not be planted too close." (*Meyer.*)

17725. PYRUS SINENSIS. **Pear.**

From Matou. "(No. 74.) A small variety of the best pear of North China. The same description as for No. 73 serves this one, only it is a far smaller variety and, as such, does not appear on the tables of the best hotels in China." (*Meyer.*)

17726. PYRUS SINENSIS. **Pear.**

From Matou. "(No. 76.) A large variety of a juicy pear with nonmelting flesh. A very good keeper of fine appearance; somewhat like our *Kieffer* pear. May be most excellent for canning purposes." (*Meyer.*)

17727. PYRUS sp. **Pear.**

From Tsing-ho-pu. "(No. 125.) A wild pear bearing fruits not larger than a hollyberry. Makes an extraordinarily dense head of branches and may be of use in small parks where small shade trees are wanted." (*Meyer.*)

17728. AMYGDALUS PERSICA. **Peach.**

From Matou. "(No. 82.) A peach described to me by the natives as very large, red meated, and juicy. The trees are thrifty growers." (*Meyer.*)

17729. AMYGDALUS DAVIDIANA.

From the mountains near Tang-shan, near Peking. "(No. 126.) A variety of thrifty growth, with medium-sized buds. Fruits absolutely inedible, but may prove to be very valuable as a spring flowering shrub. The Chinese cultivate many different varieties as dwarfed specimens and for winter forcing." (*Meyer.*)

17730. AMYGDALUS DAVIDIANA.

From the mountains near Tang-shan, near Peking. "(No. 127.) A variety of rather stunted growth, with large-sized buds. May prove to be a valuable addition to our spring flowering shrubs." (*Meyer.*)

17731. AMYGDALUS DAVIDIANA.

From the mountains near Tang-shan, near Peking. "(No. 129.) A very diminutive form of wild peach. Grows in very rocky places and has small, silvery-white twigs. May be of use as a shrub for rockeries." (*Meyer.*)

17732. PRUNUS sp. **Cherry.**

From Pee-san. "(No. 79.) A bush cherry bearing small, red fruits which ripen here in early June. Is grafted upon wild peach stock low down in the ground." (*Meyer.*)

17733. PRUNUS sp. **Cherry.**

From Pee-san. "(No. 80.) A larger variety than No. 79; otherwise the the same description applies to it." (*Meyer.*)

17723 to 17743—Continued.

17734. Pistacia chinensis. **Pistache.**

From Wei-tsan Mountains. "(Nos. 71 and 90.) The staminate form of the Chinese pistache. A very ornamental tree with graceful, pinnate foliage; grows to very large dimensions." (*Meyer.*)

17735. Pistacia chinensis. **Pistache.**

From Wei-tsan Mountains. "(Nos. 72 and 89.) The carpellate form of the Chinese pistache. A rather ornamental, small tree; bears heavy bunches of small, scarlet, and purplish colored berries." (*Meyer.*)

17736. Aesculus chinensis. **Chinese horse-chestnut.**

From Wei-tsan Mountains. "(No. 81.) An ornamental shade tree with somewhat smaller leaves than the ordinary horse-chestnut; when old gets to be very spreading. A very rare tree in north China and entirely new to America." (*Meyer.*)

17737. Salix sp. **Willow.**

From Scha-ho-schonn. "(Nos. 121 and 122.) A remarkable willow which forms naturally a dense, flat-globular head." (*Meyer.*)

17738. Salix sp. **Willow.**

From the mountains near Tang-shan, near Peking. "(No. 133.) A willow with bright yellow bark, found in a ravine." (*Meyer.*)

17739. Crataegus pinnatifida. **Hawthorn.**

From Matou. "(No. 131.) A variety differing in growth from those sent under No. 9 (S. P. I. No. 17171.) According to the natives, the fruits are of large size. Grown as an ornamental as well as a fruit tree." (*Meyer.*)

17740. Catalpa bungei. **Catalpa.**

From Fung-tai. "(No. 138.) Probably a different form of this beautiful tree from those sent under No. 13 (S. P. I. No. 16914)." (*Meyer.*)

17741. Malus sp. **Crab apple.**

From Fung-tai. "(No. 139.) An ornamental, red-flowered shrub, common in Chinese gardens. Probably adapted to dry places." (*Meyer.*)

17742. Populus sp. **Poplar.**

From Matou. "(No. 77.) A poplar with small leaves and black-colored bark; grown as a wind-break on very sandy soils." (*Meyer.*)

17743. Populus sp. **Poplar.**

From Matou. "(No. 132.) A silvery-barked poplar; grown as a wind-break on very sandy soils." (Meyer).

17744 to 17755.

From Chi-li Province, China. Received at the Plant Introduction Garden, Chico, Cal., through Mr. F. N. Meyer, January 23, 1906.

A miscellaneous collection of roots and bud sticks, as follows:

17744. Rubus sp.

From Shan-hai-kwan. "(No. 6.) A Rubus found in a semishady, dry situation. At the time of collection no fruits were present." (*Meyer.*)

17745. Juglans regia. **Persian walnut.**

From Chang-li. "(No. 8.) Scions from a soft-shell walnut tree, which produces, according to the owner, on some branches also paper-shell nuts. Nuts sent to Washington, D. C., under 51a (S. P. I. No. 17945)." (*Meyer.*)

17744 to 17755—Continued.

17746. JUGLANS REGIA. **Persian walnut.**

From Chang-li. "(No. 45.) A paper-shell walnut, of which nuts were sent to Washington, D. C., under No. 36a (S. P. I. No. 17946)." (*Meyer.*)

17747. JUGLANS REGIA. **Persian walnut.**

From Chang-li. "(No. 48.) A large nut with medium soft shell." (*Meyer.*)

17748. FRAXINUS LONGICUSPIS (?). **Ash.**

From Shan-hai-kwan. "(Nos. 11 and 19.) An ash which assumed fine, reddish brown tints at the time of collecting. The leaves are not as large or as pinnate as those of *Fraxinus excelsior*. The tree is decidedly ornamental." (*Meyer.*)

17749. (Undetermined.)

From Shan-hai-kwan. "(No. 41.) A shrubby Lespedeza, growing between rocks." (*Meyer.*)

17750. (Undetermined.)

From Shan-hai-kwan. "(No. 43.) A perennial leguminous plant with trifoliate leaves and climbing, semiwoody stems, which are extremely tenacious and are used by the Chinese in tying grapes to trellises and in upholding heavily loaded branches of fruit trees. Is the same as No. 110 (S. P. I. No. 17162)." (*Meyer.*)

17751. CRATAEGUS sp. **Hawthorn.**

From Chang-li. "(No. 42.) The same as No. 10 (S. P. I. No. 17170); used as stock for *Crataegus pinnatifida*." (*Meyer.*)

17752. ZIZYPHUS SATIVA. **Jujube.**

From Chang-li. "(No. 44.) A large variety of the Chinese 'date'; is grown in large orchards by the Chinese and is used either fresh or dried. The trees are planted from 5 to 10 feet apart, and the bark is ringed to make them bear more heavily." (*Meyer.*)

17753. PINUS sp. **Pine.**

From Chang-li. "(No. 57.) Found growing wild in the mountains; is rather stunted when older, but looks extremely characteristic. Used by the natives to plant in graveyards." (*Meyer.*)

17754. DAUCUS CAROTA. **Carrot.**

From Chang-li. "(No. 58.) A blood red carrot; a very sweet variety used cooked and pickled." (*Meyer.*)

17755. VITIS sp. **Grape.**

From Tientsin. "(No. 66.) A light purple grape with rather small berries; otherwise the same description applies to it as to those sent under Nos. 59 and 65 (S. P. I. Nos. 17467 and 17468)." (*Meyer.*)

17756 and 17757. ANDROPOGON SORGHUM. **Sorghum.**

From Lawrence, Kans. Received through F. Barteldes & Co., March 2, 1906.

17756. *Colman Orange Cane.* **17757.** *African.*

17758 to 17832.

From Glasnevin, Dublin, Ireland. Received from the Royal Botanic Gardens, March 2, 1906.

A collection, mostly of grass and leguminous forage plants seeds, as follows:

17758. Erodium absinthoides.
17759. Erodium cheilanthifolium.
17760. Erodium chelidonifolium.
17760a. Erodium gruinum.
17761. Erodium hymenodes.
17762. Erodium manescavi.
17763. Erodium pelargoniflorum.
17764. Erodium semenovii.
17765. Erodium trichomanifolium.
17766. Erodium verbenaefolium.
17767. Galega biloba.
17768. Galega persica.
17769. Lathyrus armitageanus.
17770. Lathyrus cruikshankii.
17771. Lathyrus gorgoni.
17772. Lathyrus latifolius.
17773. Lathyrus nissolia.
17774. Lathyrus odoratus.
17775. Lathyrus pyrenaicus.
17776. Lathyrus rotundifolius.
17777. Lathyrus sibthorpii.
17778. Medicago decandollii.
17779. Medicago elegans.
17780. Medicago intertexta.
17781. Medicago orbicularis.
17782. Medicago scutellata.
17783. Medicago tuberculata.
17784. Melilotus leucantha.
17785. Onobrychis caput-galli.
17786. Onobrychis crista-galli.
17787. Scorpiurus muricatus.
17788. Scorpiurus subvillosus.
17789. Scorpiurus vermiculata.
17790. Vicia grandiflora.
17791. Vicia orobus.
17792. Vicia sylvatica.
17793. Aegilops macrochaeta.
17794. Aegilops macrura.
17795. Aegilops ovata.
17796. Aegilops squarrosa.
17797. Aegilops triaristata.
17798. Aegilops triuncialis.
17799. Agropyron acutum.
17800. Agropyron muricatum.
17801. Arrhenatherum avenaceum.
17802. Arrhenatherum avenaceum bulbosum.
17803. Avena argentea.
17804. Avena atropurpurea.
17805. Avena orientalis.
17806. Dactylis altaica.
17807. Dactylis glaucescens.
17808. Dactylis hispanica.
17809. Hierochloe borealis.
17810. Holcus argenteus.
17811. Pennisetum caudatum.
17812. Pennisetum latifolium.
17813. Phalaris coerulescens.
17814. Phalaris trigyna.
17815. Phleum arenarium.
17816. Phleum asperum.
17817. Phleum boehmeri.
17818. Phleum intermedium.
17819. Phleum michelii.
17820. Phleum parnassicum.
17821. Phleum pratense.
17822. Phleum tenue.
17823. Brachypodium pinnatum.
17824. Agropyron repens.
17825. Triticum vulgare (?)
17826. Agropyron cristatum.
17827. Agropyron elymoides.
17828. Triticum firmum.
17829. Agropyron repens.
17830. Triticum turgidum.
17831. Agropyron repens.
17832. Dianthus squarrosus.

17833 and 17834. Andropogon sorghum. **Sorghum.**

From Des Moines, Iowa. Received through the Iowa Seed Company, March 3, 1906.

Amber Cane.

17835 and 17836. Ipomoea spp.

From Miami, Fla. Received through the Subtropical Laboratory and Garden (Nos. 185 and 186), March 5, 1906.

17835. Seed of a yellow-flowered variety of Ipomoea; origin, Cuba. (No. 186.)

17836. Seed of a purple-flowered variety of Ipomoea; origin, Jamaica, British West Indies. (No. 185.)

17837 to 17841.

From New York, N. Y. Received through Henry Nungesser & Co., March 5, 1906.

Grass and forage crop seeds, as follows:

17837. Agrostis alba. **Redtop.**

17838. Festuca elatior. **Tall fescue.**

17839. Ornithopus sativus. **Serradella.**

17840. Trifolium pratense. **Red clover.**

17841. Trifolium incarnatum. **Crimson clover.**

The ordinary or early crimson clover.

17842 to 17954.

From Peking, China. Received through Mr. F. N. Meyer, February 23, 1906.

A collection of seeds, as follows:

17842. Quercus dentata. **Oak.**

From Ming Tombs. "(No. 25a.) Seed obtained from the same tree as that sent under No. 12a (S. P. I. No. 18265); secured later in the season, the green leaves having changed to a gorgeous red. Probably the same as No. 24a (S. P. I. No. 17879)." (*Meyer.*) (For description see No. 18265.)

17843. (Undetermined.)

From Peking. "(No. 122a.) Seed of a plant bearing bright scarlet-colored nonedible fruits about the size of an egg." (*Meyer.*)

17844. Prunus armeniaca. **Apricot.**

From Peking. "(No. 15a.) Seed of a sweet variety of apricot sold in Peking under the name of 'almonds'; are eaten as dessert and also used in confectionery." (*Meyer.*)

17845. Prunus armeniaca. **Apricot.**

From Peking. "(No. 16a.) Seed of a bitter variety of apricot sold in Peking under the name of 'almonds'; used only in confectionery. (*Meyer.*)

17846. Aristolochia sp.

From Shan-hai-kwan. (No. 134a.)

17847. Phaseolus angularis. **Adzuki bean.**

From Chang-li. "(No. 37a.) Considered to be the best table bean in Chang-li." (*Meyer.*)

17842 to 17954—Continued.

17848. PHASEOLUS RADIATUS. **Mung bean.**

From Chang-li. "(No. 43a.) A small, edible bean; is grown between rows of sweet potatoes and also cotton; ripens before either of these crops are ready to be harvested." (*Meyer.*)

17849. VIGNA UNGUICULATA. **Cowpea.**

From Tientsin. "(No. 144a.) Used for food; also roasted for confectionery." (*Meyer.*)

17850. PHASEOLUS CALCARATUS. **Bean.**

From Shan-hai-kwan. "(No. 46a.) A small, long bean differing in shape from all other beans; used for food, especially in soups." (*Meyer.*)

17851. PHASEOLUS ANGULARIS. **Adzuki bean.**

From Tientsin. "(No. 143a.) A variety of bean used for food; also for confectionery. The beans are boiled, made in a pulp, sweetened with sugar, and baked in small cakes." (*Meyer.*)

17852. GLYCINE HISPIDA. **Soy bean.**

From Peking. "(No. 17a.) These beans are roasted and sold in Peking as delicatessen." (*Meyer.*)

17853. VICIA FABA. **Broad bean.**

From Shan-hai-kwan. "(No. 45a.) A green variety of broad bean; apparently a different strain." (*Meyer.*)

17854. RICINUS COMMUNIS. **Castor oil plant.**

From Peking. "(No. 61a.) The ordinary castor oil bean. The oil is extracted from the seeds and used in the native lamps. After frost the stalks are uprooted and used for fuel." (*Meyer.*)

17855. VIGNA UNGUICULATA. **Cowpea.**

From Shan-hai-kwan. "(No. 44a.) A light-colored bean used as food; grown between millet and sweet potatoes." (*Meyer.*)

17856. VIGNA UNGUICULATA. **Cowpea.**

From Shan-hai-kwan. "(No. 47a.) A light brown-colored bean used for food in the green and dried state; grown between rows of small millet and sweet potatoes." (*Meyer.*)

17857. GLYCINE HISPIDA. **Soy bean.**

From Shan-hai-kwan. "(No. 42a.) Used for food in Shan-hai-kwan." (*Meyer.*)

17858. PHASEOLUS VULGARIS. **Bean.**

From Tientsin. "(No. 81a.) A fine variety of Red Haricot beans; eaten when green." (*Meyer.*)

17859. PHASEOLUS VULGARIS. **Bean.**

From Peking. "(No. 18a.) *White Haricot.* These are eaten boiled as dry beans, or are used as a vegetable when fresh, and as such they are very fine. Might do well as string beans in the Atlantic States." (*Meyer.*)

17860. VICIA FABA. **Horse bean.**

From Tchang-ping-tcho. "(No. 115a.) A horse bean used for food in north China." (*Meyer.*)

17861. GLYCINE HISPIDA. **Soy bean.**

From Sachon. "(No. 28a.) A small, black soy bean grown for fodder; late variety. An excellent food for stock; must be boiled before being fed." (*Meyer.*)

17842 to 17954—Continued.

17862. Glycine hispida. **Soy bean.**

From Tientsin. "(No. 152a.) A fine variety of soy bean used to make bean cheese from." (*Meyer.*)

17863. Fagopyrun esculentum. **Buckwheat.**

From Shan-hai-kwan. "(No. 48a.) A variety of buckwheat sparsely grown around Shan-hai-kwan; used for making bread." (*Meyer.*)

17864. Brassica pe-tsai. **Pe-tsai cabbage.**

From Shan-hai-kwan. "(No. 58a.) An excellent, white, long-headed cabbage, which can be kept in cellars all winter. The plants love a rich, well-worked soil and can not stand drought. The Chinese irrigate them carefully, for the more they are irrigated the larger they grow. Chinese name *Pai tsay.*" (*Meyer.*)

17865. Brassica pe-tsai. **Pe-tsai cabbage.**

From Tientsin. "(No. 83a.) A very small variety of green cabbage." (*Meyer.*) Apparently a mixture of several species.

17866. Brassica pe-tsai. **Pe-tsai cabbage.**

From Tchang-ping-tcho. "(No. 80a.) A very heavy, long-headed white cabbage; late variety." (*Meyer.*)

17867. Brassica chinensis. **Pak-choi cabbage.**

From Tientsin. "(No. 100a.) A short cabbage of which the midribs of the leaves get to be quite fleshy. Sold in Tientsin, but as yet I have not seen it anywhere else." (*Meyer.*)

17868. Brassica pe-tsai. **Pe-tsai cabbage.**

From Chang-li. "(No. 1a.) A remarkably fine variety of white cabbage; the best I have ever seen. It is a long-headed variety and grows from 2½ to 3 feet high. The taste and smell are entirely different from any other cabbage. A very fine vegetable. Wants careful culture and can not stand drought. Known as *Shantung* cabbage." (*Meyer.*)

17869. Brassica pe-tsai. **Pe-tsai cabbage.**

From Shan-hai-kwan. "(No. 101a.) Sold to me as a *Shantung* cabbage; a very good variety." (*Meyer.*)

17870. Daucus carota. **Carrot.**

From Hsuen-hwa-fu. "(No. 30a.) A sweet, light yellow, nearly white carrot. Grows on alkaline soil." (*Meyer.*)

17871. Daucus carota. **Carrot.**

From Tientsin. "(No. 82a.) An orange colored, medium short variety of the ordinary carrot; more in favor here than the beet-red variety." (*Meyer.*)

17872. Daucus carota. **Carrot.**

From Tchang-ping-tcho. "(No. 66a.) A very sweet, beet-red carrot. Is used boiled as well as pickled. Loves a well-drained soil and does not want to suffer from drought." (*Meyer.*)

17873. Celastrus paniculatus (?).

From Shan-hai-kwan. "(No. 123a.) A very large variety found growing in the mountains near Shan-hai-kwan." (*Meyer.*)

17874. Celastrus paniculatus (?).

From Shan-hai-kwan. "(No. 124a.) A very small variety found growing in the mountains near Shan-hai-kwan." (*Meyer.*)

17875. Celtis sp.

From Tang-san. ("No. 92a.) A rather large-leaved *Celtis;* useful as a small shade tree." (*Meyer.*)

17842 to 17954—Continued.

17876. Castanea sativa. **Chestnut.**

From Peking. "(No. 33a.) The largest variety to be found on the markets in Peking; said to have come from Chee-san, near Chang-li. The nuts are roasted with sand and an oily substance which bleaches them, and are remarkably sweet. The trees on which they grow are seedlings." (*Meyer.*)

17877. Castanea sativa. **Chestnut.**

From Peking. "(No. 34a.) The ordinary Chinese chestnut, sold everywhere in northern China. They are very small, but make up in sweetness what they lack in size. Are roasted the same as No. 33a (S. P. I. No. 17876), and are said to have come from Chee-san, near Chang-li. The trees I saw there grow in sheltered spots and seem to love a rocky soil." (*Meyer.*)

17878. Quercus sp. **Oak.**

From western hills near Peking. "(No. 26a.) A fine oak, resembling a chestnut. The acorns are eagerly collected and used for tanning purposes. Probably not very hardy, as it grows in quite sheltered valleys." (*Meyer.*)

17879. Quercus dentata. **Oak.**

From Tang-san. "(No. 24a.) A beautiful, large-leaved oak. The leaves assume gorgeous colors in autumn; a very desirable tree. Grows to medium dimensions." (*Meyer.*)

17880. Zea mays. **Corn.**

From Pee-san. "(No. 19a.) A very fine strain of corn growing in a rather dry part of the country. This is one of the best varieties I have seen in northern China. The plants grow about six feet high and have uniformly two ears to each stalk." (*Meyer.*)

17881. Zea mays. **Corn.**

From Shan-hai-kwan. "(No. 20a.) A white-seeded corn growing on stony soil around Shan-hai-kwan, where it gets quite cold." (*Meyer.*)

17882. Crataegus pinnatifida. **Hawthorn.**

From Chang-li. "(No. 52a.) The largest variety of *Cretaegus pinnatifida.* A fine fruit for preserves, and a very ornamental tree; is simply loaded in the fall with red berries and keeps its large, glossy, green leaves till late in autumn." (*Meyer.*)

17883. Crataegus pinnatifida. **Hawthorn.**

From Chang-li. "(No. 104a.) Fruits of different sizes to show variation." (*Meyer.*)

17884. Dolichos lablab. **Hyacinth bean.**

From western hills near Peking. "(No. 96a.) The same as No. 95a (S. P. I. No. 17885), but from a different locality." (*Meyer.*)

17885. Dolichos lablab. **Hyacinth bean.**

From Hawai-jou. "(No. 95a.) A bean which is grown around gardens as a windbreak, and at the same time the green beans are used as a vegetable; they are somewhat coarse but do not taste at all bad. The plant is a climber and as such needs supports." (*Meyer.*)

17886. Elaeagnus sp.

From Chang-li. "(No. 120a.) A silvery-leaved Elaeagnus which ripens small, red berries in October. Grows from 5 to 6 feet high. Under cultivation it might become denser headed and be an ornamental shrub." (*Meyer.*)

17887. Malus sp. **Crab apple.**

From Peking. (Not numbered by Meyer.) "A crab apple sold on the streets in Peking." (*Meyer.*)

17842 to 17954—Continued.

17888. GLEDITSIA sp.

From Hwai-lai. "(No. 109a.) A small tree; may be fit for a shade tree. Can apparently stand lots of cold and drought, as I found them growing on the edges of a ravine on the road to Mongolia." (*Meyer.*)

17889. GLEDITSIA sp.

From Wei-tsan Mountains near Peking. "(No. 106a.) An ornamental shade tree, bearing dark-brown pods. Apparently a slow grower." (*Meyer.*)

17890. CORYLUS sp. **Hazelnut.**

From Peking. "(No. 32a.) A small hazelnut said to have come from very far north; bought in Peking." (*Meyer.*)

17891. HUMULUS sp. **Hop.**

From Tientsin. "(No. 136a.) A wild hop found growing around here along banks and in thickets." (*Meyer.*)

17892. ZIZYPHUS SATIVA. **Jujube.**

From Peking. "(No. 14a.) The Chinese collect the fruit and make a paste from it by boiling the fruit and straining the liquid. It is a bad weed that easily overruns dry plains. It grows over the whole Peking city wall and its spines easily break off in one's flesh. To be used for breeding purposes." (*Meyer.*)

17893. JUNIPERUS CHINENSIS. **Chinese juniper.**

From Tang-san. "(No. 71a.) Seeds from a very pyramidal form of the juniper. These are universally used in northern China to plant around graves, and also as windbreaks. They seem to be able to withstand much drought." (*Meyer.*)

17894. KOELREUTERIA PANICULATA. **Varnish tree.**

From Ming Tombs. "(No. 85a.) Seed from the bladderpod tree, varying in looks from the usual type." (*Meyer.*)

17895. BRASSICA OLERACEA. **Kohlrabi.**

From Hsuen-hwa-fu. "(No. 73a.) A very large variety of kohlrabi grown where the soil is strongly alkaline." (*Meyer.*)

17896. CASTANEA SATIVA. **Chestnut.**

From Tientsin. "(No. 146a.) A large variety of chestnut sold on Tientsin market; very sweet when boiled or roasted." (*Meyer.*)

17897. ACER sp. **Maple.**

From Tang-san. "(No. 27a.) A very beautiful maple which grows to be a medium-sized tree, of very characteristic form. The leaves assume gorgeous colors in the fall." (*Meyer.*)

17898. ACER sp. **Maple.**

From Wei-tsan Mountains near Peking. "(No. 67a.) An ornamental, small-leaved maple, growing wild in the mountains." (*Meyer.*)

17899. CHAETOCHLOA ITALICA. **Millet.**

From Chang-li. "(No. 53a.) A small variety of millet sold in Chang-li, where it is ground up and used for food." (*Meyer.*)

17900. CHAETOCHLOA ITALICA. **Millet.**

From Chang-li. (No. 105a.)

17901. CHAETOCHLOA ITALICA. **Millet.**

From Chang-li. "(No. 50a.) A variety of medium-sized millet, growing about 5 feet high; stools out very much and is, consequently, a great straw producer. The seeds are used as food, but are not valued as highly as other millets on account of the difficulty of hulling them." (*Meyer.*)

17842 to 17954—Continued.

17902. AMYGDALUS PERSICA. **Peach.**

From Peking. "(No. 88a.) Seed from fruits, among which were some strange types, eaten in different places in north China." (*Meyer.*)

17903. AMYGDALUS PERSICA. **Peach.**

From Shan-hai-kwan. "(No. 89a.) A hardy variety which can probably be grown very far north." (*Meyer.*)

17904. PERILLA OCYMOIDES. **Perilla.**

From Peking. "(No. 79a.) A plant grown in some localities for the production of oil, which is obtained from the seed." (*Meyer.*)

17905. DIOSPYROS LOTUS. **Persimmon.**

From Chang-li. "(No. 69a.) A long-fruited, wild persimmon. The fruits are small and not borne in such great quantities as No. 57a (S. P. I. No. 17906); otherwise the same description applies to it." (*Meyer.*)

17906. DIOSPYROS LOTUS. **Persimmon.**

From Chang-li. "(No. 57a.) A round-fruited, wild persimmon. The fruits are not larger than a cherry, but are very sweet tasting and the trees are heavily loaded. A valuable acquisition as a fruit and ornamental tree, also as a stock plant for the large, seedless persimmon." (*Meyer.*)

17907. DIOSPYROS LOTUS. **Persimmon.**

From Nankon Pass. "(No. 31a.) Seed of the wild persimmon collected from old trees growing at elevated points and apparently at the northern limit of their kind. To be used as stock for the large, seedless persimmon, and also for its fruit and as an ornamental." (*Meyer.*)

17908. RHAMNUS sp.

From Shan-hai-kwan. "(No. 132a.) A very small, shrubby Rhamnus growing wild in the mountains. Well fit for rockeries and as a very small hedge plant." (*Meyer.*)

17909. RHAMNUS sp.

From Tang-san. "(No. 126a.) A large-leaved, bushy Rhamnus from 3 to 6 feet in height; loaded at time of collection with black berries. Might do well as a hedge plant, as it has long spines and is very dense." (*Meyer.*)

17910. PINUS sp. **Pine.**

From Chang-li. "(No. 129a.) The common pine found growing in Chinese cemeteries." (*Meyer.*)

17911. PINUS BUNGEANA. **Pine.**

From Ming Tombs. (No. 108a.) The same as S. P. I. No. 17912.

17912. PINUS BUNGEANA. **Pine.**

From Wei-tsan Mountains. "(No. 137a.) A very beautiful pine with silvery white bark; a slow grower, but extremely striking when old. The bark peels off in flakes, like the sycamore, but the foliage is not as dense as in most other pines." (*Meyer.*)

17913. PRUNUS sp. **Plum.**

From Peking. "(No. 90a.) Apparently a very late plum; freestone; fruits not very large, yellowish green with a purplish bloom; rather sweet in taste." (*Meyer.*)

17914. ORYZA SATIVA. **Rice.**

From Shan-hai-kwan. "(No. 49a.) A variety of upland rice said to be a softer quality than the one sent under No. 40a (S. P. I. No. 17915)." (*Meyer.*)

17915. ORYZA SATIVA. **Rice.**

From Shan-hai-kwan. "(No. 40a.) An upland rice grown sparingly around here. Should be hardy very far north." (*Meyer.*)

17842 to 17954—Continued.

17916. ORYZA SATIVA. **Rice.**

From Sachon. "(No. 29a.) Bought as an upland rice, but apparently is a lowland variety. Should do well quite far north, as the place where it was raised is about 50 miles north of Peking." (*Meyer.*)

17917. ORYZA SATIVA. **Rice.**

From Chang-li. "(No. 39a.) An upland rice cultivated around Chang-li. Should be hardy pretty far north." (*Meyer.*)

17918. CELASTRUS FLAGELLARIS.

From Wei-tsan Mountains, near Peking. "(No. 68a.) A small, creeping shrub, bearing red, edible berries." (*Meyer.*)

17919. SESAMUM INDICUM. **Sesame.**

From Tientsin. "(No. 149a.) These seeds are universally used throughout China in confectionery and baked on the surface of round cakes, and as such they taste pretty good. The plants seem to like a rather rich soil, and produce many seed pods on one stalk. The Chinese also make an oil out of the seed, in which they fry nearly everything." (*Meyer.*)

17920. ANDROPOGON SORGHUM. **Sorghum.**

From Pee-san. "(No. 21a.) This variety has white seeds and is used for making bread; as such it is more highly esteemed than the brown-colored varieties, which are generally only used as fodder for the domestic animals." (*Meyer.*)

17921. ANDROPOGON SORGHUM. **Sorghum.**

From Pee-san. "(No. 22a.) A variety with dark brown seeds, universally used throughout north China as fodder for domestic animals. The stems of sorghum are used in building houses, the stalks being embedded in the mud walls; also for making fences, baskets, mats, tying and roofing material, and for fuel." (*Meyer.*)

17922. ANDROPOGON SORGHUM. **Sorghum.**

From Pee-san. "(No. 23a.) A variety with light brown seeds, not very much grown. It is used where found as a fodder plant and also for making a brown-colored kind of bread." (*Meyer.*)

17923. ANDROPOGON SORGHUM. **Sorghum.**

From Tientsin. "(No. 151a.) A superior variety of sorghum which grows from 15 to 20 feet in height. The grain is ground, and from the flour a good kind of bread is made; is used also for the same purpose as the one described under No. 22a (S. P. I. No. 17921). In addition to this the leaves are pulled off before they have turned brown, when they make an excellent cattle food, either fresh or dry. The roots are also dug and used as fuel." (*Meyer.*)

17924. SPINACIA OLERACEA. **Spinach.**

From Tchang-ping-tcho. "(No. 55a.) An exceptionally good winter spinach, which, with a little protection from cold, produces greens the greater part of the winter. The seeds should be sown very thinly, as the plants grow rather large." (*Meyer.*)

17925. HELIANTHUS ANNUUS. **Sunflower.**

From western hills, near Peking. "(No. 59a.) The ordinary, single-headed sunflower, used in China in many ways. The leaves are pulled off and fed to domestic animals; the seeds are eaten as delicatessen, and the stalks are used for fuel." (*Meyer.*)

17926. THUYA ORIENTALIS. **Arborvitae.**

From Peking. "(No. 84a.) Seeds collected from old, weather-beaten trees on the grounds of the Temple of Heaven in Peking. Can stand lots of cold and drought." (*Meyer.*)

17842 to 17954—Continued.

17927. NICOTIANA sp. **Tobacco.**

From western hills near Peking. "(No. 62a.) An inferior tobacco much used by the lower classes." (*Meyer.*)

17928. NICOTIANA TABACUM. **Tobacco.**

From Chang-li. "(No. 86a.) A medium quality of tobacco grown around Chang-li." (*Meyer.*)

17929. JUGLANS hyb. (?) **Walnut.**

From Nankon Pass. "(No. 87a.) A very strange walnut. Those with highly undulated surfaces are used as a remedy for stiff fingers, and the smooth ones are eaten. A hard-shelled variety. Probably a hybridization has taken place between *J. mandshurica* and *J. regia sinensis.*" (*Meyer.*)

17930. RAPHANUS SATIVUS. **Radish.**

From Chang-li. "(No. 2a.) A giant red radish; flavor not strong. Seems to like a well-drained, sandy soil. Attains a size of from 3 to 7 inches in diameter." (*Meyer.*)

17931. RAPHANUS SATIVUS. **Radish.**

From San-kai-tien. "(No. 76a.) A red radish of elongated form. Looks very nice when exposed for sale." (*Meyer.*)

17932. RAPHANUS SATIVUS. **Radish.**

From Shan-hai-kwan. "(No. 56a.) A radish with a sweet, fresh taste; is very appetizing if cut lengthwise and eaten raw either before or with meals. These seeds have both the green and red varieties among them." (*Meyer.*)

17933. RAPHANUS SATIVUS. **Radish.**

From Shan-hai-kwan. "(No. 60a.) A late variety of a long, white radish; quite sweet and not at all strong when boiled." (*Meyer.*)

17934. RAPHANUS SATIVUS. **Radish.**

From Shan-hai-kwan. "(No. 74a.) A smaller variety than No. 2 (S. P. I. No. 17930); otherwise the same description applies to it." (*Meyer.*)

17935. RAPHANUS SATIVUS. **Radish.**

From San-kai-tien. "(No. 75a.) A very strange variety, the outside looking like a long, green turnip; wine red colored flesh. Is sliced and eaten raw as a relish." (*Meyer.*)

17936. RAPHANUS SATIVUS. **Radish.**

From Shan-hai-kwan. "(No. 77a.) A green variety; very appetizing if sliced and eaten raw." (*Meyer.*)

17937. RAPHANUS SATIVUS. **Radish.**

From Tientsin. "(No. 78a.) The same as No. 77a (S. P. I. No. 17936), but obtained in a different locality." (*Meyer.*)

17938. AMPELOPSIS sp.

From Tientsin. "(No. 70a.) An ornamental vine well fit to cover trellises or verandas; has deeply laciniate, palmate leaves, and bears yellow berries in the fall. Seems to be very hardy and able to withstand droughts." (*Meyer.*)

17939. AMPELOPSIS sp.

From Tientsin. "(No. 93a.) A vine bearing red berries, similar to No. 70a (S. P. I. No. 17938) but more ornamental." (*Meyer.*)

17940. AMPELOPSIS sp.

From Wei-tsan Mountains near Peking. "(No. 113a.) A vine bearing small, white berries; may be fit for covering fences and rough places." (*Meyer.*)

17842 to 17954—Continued.

17941. VITEX sp.

From Wei-tsan Mountains near Peking. "(No. 116a.) An aromatic plant, the peeled twigs of which are used to make fine baskets, and the flowering tops are dried and used as insect powder." (*Meyer.*)

17942. AMPELOPSIS sp.

From Shan-hai-kwan. "(No. 133a.) A vine with deeply lobed leaves and white berries; may be fit to cover rock fences or waste places." (*Meyer.*)

17943. JUGLANS REGIA. **Persian walnut.**

From Gopo, near Chang-li. "(No. 41a.) A large variety of soft-shelled walnut." (*Meyer.*)

17944. JUGLANS REGIA. **Persian walnut.**

From Peking. "(No. 35a.) A very large walnut bought in Peking." (*Meyer.*)

17945. JUGLANS REGIA. **Persian walnut.**

From Gopo, near Chang-li. "(No. 51a.) A very soft-shelled walnut; can be cracked with the hand. Not a perfect nut, though. These nuts are from one tree, which, according to the owner, produces perfectly shelled nuts on some branches and imperfectly formed ones on other branches." (*Meyer.*)

17946. JUGLANS REGIA. **Persian walnut.**

From Chang-li. "(No. 36a.) This is the genuine paper-shell walnut and as such sells for three times as much money as the hard-shelled varieties. The nuts can be peeled like peanuts. The trees are seedlings and are scattered through the groves." (*Meyer.*)

17947. TRITICUM VULGARE. **Wheat.**

From Chang-li. "(No. 38a.) A sample of the best wheat sold in Chang-li." (*Meyer.*)

17948. ROSA sp. **Rose.**

From Chang-li. "(No. 130a.) A wild rose found growing along earth banks." (*Meyer.*)

17949. WISTARIA CHINENSIS. **Chinese wistaria.**

From Tang-san. (No. 107a.)

17950. ARTEMISIA ANNUA. **Wormwood.**

From Peking. "(No. 111a.) This is the plant on which the people around here graft their chrysanthemums and on which they do well. The Chinese claim the chrysanthemum does better when grafted than when left on its own roots; they also say the grafted plants bear transplanting and lack of water much the best." (*Meyer.*)

17951. XANTHOXYLUM sp.

From Shan-hai-kwan. "(No. 125a.) A fine-leaved Xanthoxylum growing wild in the mountains near Shan-hai-kwan. Attains a height of from 4 to 5 feet, is rather ornamental, and has a very agreeable odor." (*Meyer.*)

17952. XANTHOXYLUM BUNGEI (?).

From Pee-san. "(No. 128a.) Used as a hedge plant. The seeds and fruit capsules furnish the Chinese with pepper; the fruit is pretty pungent." (*Meyer.*)

17953. BRASSICA PE-TSAI. **Pe-tsai cabbage.**

From Shan-hai-kwan. "(No. 72a.) A long-headed cabbage, late variety. Can be kept all winter in a frost-proof cellar." (*Meyer.*)

17954. CYDONIA JAPONICA. **Japanese quince.**

From Peking. "(No. 145a.) A very fragrant quince used in China to perfume a room. Grows in south China." (*Meyer.*)

17955 to 17958.

From Santiago de las Vegas, Cuba. Received through Prof. C. F. Baker, March 6, 1906.

Seeds, as follows:

17955. BAUHINIA KRUGII.

"The finest Bauhinia of the West Indies." (*Baker.*)

17956. EUGENIA PUNICIFOLIA.

"An erect, ornamental shrub with fine flowers and fruit." (*Baker.*)

17957. CANAVALIA sp. **Knife bean.**

"A nonedible, brown variety producing a great vine." (*Baker.*)

17958. PACHYRHIZUS ANGULATUS. **Yam bean.**

17959. CLEMATIS sp.

From Hwai-lai, Chi-li Province, China. Received through Mr. F. N. Meyer, February 23, 1906.

"(No. 135a.) A small clematis covering banks along ditches. Its white seed-down makes it appear like snow in the distance; not ornamental." (*Meyer.*)

17960. ARACHIS HYPOGAEA. **Peanut.**

From Amani, German East Africa. Received through Dr. A. Zimmermann, February 23, 1906.

Peanuts from Mikindani.

17961. CANNA FLACCIDA. **Canna.**

From Oneco, Fla. Received through Reasoner Bros., March 9, 1906.

17962. MISCANTHUS CONDENSATUS.

From Yokohama, Japan. Received through Suzuki & Iida, of New York City, March 6, 1906.

17963. AGROSTIS STOLONIFERA. **Creeping bent-grass.**

From New York, N. Y. Received through Henry Nungesser & Co., March 6, 1906.

17964. VITIS MUNSONIANA. **Mustang grape.**

From Elliotts Key, Fla. Received through Dr. John Gifford, March 7, 1906.

17965 and 17966.

From Brighton Beach, Wash. Received through Mr. A. B. Leckenby, March 9, 1906.

Plants, as follows:

17965. FATSIA HORRIDA. **Devil's-club.**

An araliaceous, densely prickly shrub with palmately lobed leaves and racemed or panicled umbels of small, greenish-white flowers.

17966. LYSICHITUM CAMTSCHATCENSE. **Skunk cabbage.**

A nearly stemless swamp aroid, with large leaves from a thick, horizontal root stock.

17967. BENINCASA CERIFERA. **Wax-gourd.**

From Manila, P. I. Received through Mr. W. S. Lyon, of the Bureau of Agriculture, March 5, 1906.

"Native name *Condol.* Matures fruit in four months from seed. Grown in Philippine Islands only upon trellises. When sliced and steeped over night in lime water and then boiled in a sugar sirup until it candies, it makes a most delicious glacé fruit." (*Lyon.*) (See No. 2936, Inventory No. 7, for description of this plant.)

17968 to 17972. BETA VULGARIS. **Sugar beet.**

From Lyons, N. Y. Received through the Lyons Beet Sugar Company, March 1906.

Sugar-beet seed, as follows:

17968. *Original Kleinwanzleben.*

Grown by Kleinwanzleben Sugar Company, Kleinwanzleben, Germany.

17969. *Schreiber's Specialitaet.*

Grown by G. Schreiber & Sons, Nordhausen, Germany.

17970. *Elite Kleinwanzleben.*

Grown by Dippe Bros., Quedlinberg, Germany.

17971. *Kleinwanzleben.*

Grown by F. Heine & Co., Hadmersleben, Germany.

17972. *Kleinwanzleben.*

Grown by C. Braune & Co., Bundorf, Germany.

17973 and 17974. BETA VULGARIS. **Sugar beet.**

From Lehi, Utah. Received through the Utah Sugar Company, March, 1906.

17973. *Kleinwanzleben.*

Grown by the Utah Sugar Company, Lehi, Utah.

17974. *Kleinwanzleben.*

Grown by the Fremont County Sugar Company, Sugar City, Idaho.

17975. BETA VULGARIS. **Sugar beet.**

From Caro, Mich. Received through the Peninsula Sugar Refining Company, March 10, 1906.

Kleinwanzleben. Grown by Otto Hoerning & Co., Eisleben, Germany.

17976 to 17980. BETA VULGARIS. **Sugar beet.**

From Owosso, Mich. Received through the Owosso Sugar Company, March 12, 1906.

Sugar beet seed, as follows:

17976. *Kleinwanzleben.*

Grown by Henry Mette & Co., Quedlinberg, Germany.

17977. *Kleinwanzleben.*

Grown by Rabbethge & Giesecke, Kleinwanzleben, Germany.

17978. *Kleinwanzleben.*

Grown by Wohanka & Co., Prague, Bohemia.

17979. *Kleinwanzleben.*

Grown by K. W. Kuhn & Co., Maarden, Holland.

17980. *Elite Kleinwanzleben.*

Grown by Otto Bruenstedt, Schladen-im-Harz, Germany.

17981. ASPARAGUS ACUTIFOLIUS.

From Nice, France. Presented by Dr. A. Robertson-Proschowsky. Received March 12, 1906.

"This is an evergreen plant which is found growing wild here, but never in abundance. It grows both in the woods and on sunny slopes; in some places where it is very dry, receiving no rainfall for two or three years. In such places the stems are short and quite leafy, and it is here only that they sometimes, but rarely, produce seeds. In the shade the plants produce stems several meters in length, climbing either shrubs or trees and hanging down the slopes, where they have a very graceful appearance. Young plants are readily transplanted when the roots are still fibrous, but when they become older and the roots are thick and fleshy it is impossible to transplant them. This asparagus in the wild state is quite a delicacy, and although scarce and sparingly found, the young shoots are eagerly sought for." (*Proschowsky.*)

17982 and 17983. NICOTIANA spp.

From Philadelphia, Pa. Received through Henry A. Dreer, Inc., March 5, 1906.

17982. NICOTIANA SANDERAE.

(See S. P. I. No. 17246.)

17983. NICOTIANA SANDERAE hyb.

(See S. P. I. No. 17247.)

17984. ANDROPOGON SORGHUM. **Sorghum.**

From Canadian, Tex. Received through Mr. Thomas F. Moody, March 10, 1906.

Sourless.

17985. COLOCASIA sp. **Dasheen.**

From Aguas Buenas, P. R. Received through Mr. A. W. Bowser, March 12, 1906.

Identical with S. P. I. No. 15395.

17986. COLOCASIA sp. **Taro.**

From Georgetown, S. C. Received through Mr. John Tull, March 12, 1906.

"Roots of the so-called *Yellow Tanier* of South Carolina. These roots were grown by me last year on Cat Island from roots given to me by Mr. Alex. Lucas, of Santee, S. C." (*Tull.*)

17987. COLOCASIA sp. **Taro.**

From Georgetown, S. C. Received through Mr. John Tull, March 12, 1906.

"Roots of the so-called *White Tanier* of South Carolina. These were grown by me on Cat Island last year from roots given to me by an old negro (John Huggins) who lives near here. He grows a few every year just for his own use, and has grown them from time immemorial." (*Tull.*)

17988. ARACHIS HYPOGAEA. **Peanut.**

From Yungas Valley, Bolivia. Received through Mr. Arthur L. Jackson, of La Paz, Bolivia, March 12, 1906.

17989. NICOTIANA TOMENTOSA

From Hamburg, Germany. Received through Mr. Albert Schenkel, March, 1906.

17990. CHAMAECYPARIS LAWSONIANA.

From Sacramento, Cal. Presented by Mr. H. A. Alspach. Received March 1, 1906.

This is a native of California and Oregon, where it grows to a height of 200 feet. It is one of the most beautiful conifers, of which about 60 garden forms exist in European nurseries and collections. (For foreign exchange.)

17991. SACCHARUM CILIARE.

From St. Kitts, British West Indies. Presented by Mr. F. R. Shepherd, curator, Botanic Gardens, at the request of Sir Daniel Morris, Commissioner of Agriculture for the West Indies. Received October 27, 1905.

Concerning this plant the following brief notice appeared in the Agricultural News, the fortnightly review of the Imperial Department of Agriculture for the West Indies (Vol. IV, p. 87):

"A number of plants of *Saccharum ciliare* raised from seed received through the Imperial Department of Agriculture from India in May last are growing at the Botanic Station, St. Kitts. These plants, which are now arrowing, appear to withstand drought well, and trials are being made to test their usefulness for fodder purposes. This species may also be suitable for forming ornamental clumps on lawns, similar to pampas grass."

17992. MEDICAGO SATIVA. **Alfalfa.**

From Province of Valencia, Spain. Received through Hon. R. L. Sprague, United States consul, Gibraltar, Spain, March 2, 1906.

"The most vigorous and best quality of alfalfa grown in the Province of Valencia, producing continuous crops the whole year." (*Sprague.*)

17993. PHOENIX DACTYLIFERA. **Date.**

From Nefta, Tunis. Presented by Mr. Louis Grech, through Mr. T. H. Kearney. Received November 1, 1905.

Menakher.

17994. TRITICUM VULGARE. **Wheat.**

From Rieti, Italy. Received through Unione Produttori Grano da Seme, March 14, 1906.

Rieti.

17995. GARCINIA MORELLA. **Gamboge.**

From Kingston, Jamaica, British West Indies. Received through Dr. W. Fawcett, director of Public Gardens, March 15, 1906.

Introduced for the purpose of growing stocks upon which to graft the mangosteen.

17996 to 17998. SECHIUM EDULE. **Chayote.**

From Mayaguez, Porto Rico. Received through the Porto Rico Agricultural Experiment Station, February 5 and April 26, 1906.

Fruit of apparently three varieties, as follows:

17996. White.

17997. Small, green.

17998. Large, green.

17999. TRIFOLIUM INCARNATUM. **Crimson clover.**

From Richmond, Va. Received through T. W. Wood & Sons, March 17, 1906.

Late White.

18000. LOLIUM ITALICUM. **Italian rye-grass.**

From New York City, N. Y. Received through Henry Nungesser & Co., March 17, 1906.

18001 to 18118. TRIFOLIUM PRATENSE. **Red clover.**

Received through Mr. Charles J. Brand of this Department and distributed by him in connection with his work on life history, seed production, and change of seed. A series of red clovers of different regional origin, being the first generation from seed of the crop of 1903 which was sown in 1904 and harvested in 1905.

18001 to 18021.

From Shirley, Ill. Received through Mr. Eugene D. Funk, March, 1906.

18022 to 18037.

From Rushville, Ind. Received through Mr. Theodore H. Reed, March, 1906.

18038 to 18054.

From Fayetteville, N. Y. Received through Mr. A. T. Armstrong, March, 1906.

18055 to 18068.

From Mauston, Wis. Received through Mr. J. B. McNown, March, 1906.

18069 to 18082.

From Wapakoneta, Ohio. Received through Mr. John A. Ritchie, March, 1906.

18083 to 18100.

From Fargo, N. Dak. Received through Prof. J. H. Shepperd, March, 1906.

18101 to 18118.

From Carlton, Oreg. Received through Mr. F. J. Canfield, April 21, 1906.

18119. BETA VULGARIS. **Sugar beet.**

From Aschersleben, Germany. Received through the Owosso Sugar Company, Owosso, Mich., March 17, 1906.

Jaensch Victrix. Grown by Mr. Gustav Jaensch.

18120. PERSEA GRATISSIMA. **Avocado.**

From Bayamon, P. R. Presented by Mr. A. B. Mitchell. Received March 19, 1906.

Mitchell. "A very superior variety. Size, large; color of flesh, dark yellow; flavor, excellent. Base, usually slender. Seed, medium to large." (*Barrett.*)

18121. CUCURBITA PEPO. **Pumpkin.**

From Australia. Presented by Mr. M. Levek, of Washington, D. C. Received March 18, 1906.

Thought by Mr. Levek to be a variety known as *Turk's Crown.*

18122. RICINUS COMMUNIS. **Castor-oil plant.**

From Santiago de las Vegas, Cuba. Received through Prof. C. F. Baker, March 19, 1906.

A large-seeded variety.

18123 to 18130.

From Bathurst, New South Wales. Presented by Prof. R. W. Peacock. Received February 13, 1906.

Samples of various native grass seeds, as follows:

18123. Eragrostis pilosa.
18124. Eleusine aegyptiaca.
18125. Diplachne fusca.
18126. Diplachne peacockii.
18127. Panicum flavidum.
18128. Panicum prolutum.
18129. Panicum decompositum.
18130. Andropogon sericeus.

18131 to 18151.

From Berkeley, Cal. Received through Prof. A. V. Stubenrauch, of the Agricultural Experiment Station, March 6, 1906.

18131. Vicia nissoliana.
18132. Vicia atropurpurea.
18133. Vicia varia.
18134. Vicia sativa obovata.
18135. Vicia pannonica.
18136. Vicia lutea.
18137. Vicia faba. **Horse bean.**
Black Spanish.
18138. Vicia sativa macrocarpa.
18139. Vicia monanthos.
18140. Vicia monanthos.
18141. Vicia calcarata.
18142. Vicia faba. **Horse bean.**
18143. Vicia faba. **Horse bean.**
Winter.
18144. Lathyrus tingitanus uniflorus.
18145. Lathyrus tingitanus.
18146. Lathyrus clymenum.
18147. Lathyrus annuus.
18148. Lathyrus ochrus.
18149. Lathyrus articulatus.
18150. Lens nigricans.
18151. Trigonella corniculata.

18152 to 18155. Chætochloa italica. Millet.

From Lawrence, Kans. Received through F. Barteldes & Co., March 20, 1906.

18152. *New Siberian.*
18153. *Hungarian.*
18154. *German.*
18155. Common.

18156. Ricinus communis. Castor-oil plant.

From Santiago de las Vegas, Cuba. Received through Prof. C. F. Baker, March 20, 1906.

A small-seeded variety.

18157. PISUM SATIVUM. **Pea.**

From Paris, France. Received through Vilmorin-Andrieux & Co., March 20, 1906.

Wax-pod.

18158 and 18159.

From Lausanne, Switzerland. Received through Prof. G. Martinet, March 21, 1906.

18158. LATHYRUS HETEROPHYLLUS.

18159. VICIA VILLOSA GLABRESCENS.

18160 to 18198. ANDROPOGON SORGHUM. **Sorghum.**

From Berlin, Germany. Presented by the Berlin Botanical Museum. Received February 14, 1906.

A collection of African sorghum seed, as follows:

18160. *Amphibolus.*
18161. *Calcareus.*
18162. *Charisianus.*
18163. *Charisianus glabrescens.*
18164. *Charisianus holstii.*
18165. *Colorans.*
18166. *Colorans.*
18167. *Colorans.*
18168. *Elegans.*
18169. *Elegans.*
18170. *Elegans.*
18171. *Inhonestus.*
18172. *Kerstingianus typicus.*
18173. *Kerstingianus typicus.*
18174. *Kerstingianus sulfureus.*
18175. *Kerstingianus sulfureus.*
18176. *Kerstingianus sulfureus.*
18177. *Kerstingianus sulfureus.*
18178. *Nitens.*
18179. *Ondongae.*
18180. *Ovulifer.*
18181. *Ovulifer.*
18182. *Ovulifer.*
18183. *Ovulifer.*
18184. *Ovulifer.*
18185. *Ovulifer.*
18186. *Ovulifer.*
18187. *Ovulifer.*
18188. *Ovulifer.*
18189. *Ovulifer.*
18190. *Ovulifer.*
18191. *Pendulus.*
18192. *Roxburghii.*
18193. *Schumannii.*
18194. *Usaramenis.*
18195. *Ziegleri.*
18196. *Elegans.*
18197. *Ovulifer.*
18198. *Ovulifer.*

18199. ELAEAGNUS hyb.

From Gotha, Fla. Received through Mr. Henry Nehrling, March 22, 1906.

18200 and 18201. ZEA MAYS. **Sweet corn.**

From North Pomfret, Vt. Received through Mr. Stephen Hewitt, March 23, 1906.

Golden Malakhov. Grown from S. P. I. No. 13256.

18200.

Amber-colored ears showing a distinct red striping; originally grown from one ear which was dark colored and very sweet.

18201.

Light amber-colored ears; sweet.

18202. VICIA FULGENS. **Scarlet vetch.**

From Paris, France. Received through Vilmorin-Andrieux & Co., March 23, 1906.

18203. ANDROPOGON SORGHUM. **Sorghum.**

From Dallas, Tex. Received through the Texas Seed and Floral Company, March 23, 1906.

Sumac Cane.

18204 to 18224. XANTHOSOMA spp. **Yautia.**

From Mayaguez, P. R. Received through the Porto Rico Agricultural Experiment Station, March 24, 1906.

A collection of yautia roots, as follows:

18204.	*Rollisa.*
18205.	*Punzera.*
18206.	*Gris Amarilla.*
18207.	*Jamaica No. 1.*
18208.	*Jamaica No. 3.*
18209.	*Jamaica No. 5.*
18210.	*Dominica.*
18211.	*Blanca.*
18212.	*Prieta.*
18213.	*Amarilla.*
18214.	*Guayamera.*
18215.	*Alocasia Marchallu.*
18216.	*Jamaica No. 2.*
18217.	*Jamaica No. 4.*
18218.	*Jamaica No. 6.*
18219.	*Islena* (Ponce).
18220.	*Gengibrilla.*
18221.	*Islena* (Aponte).
18222.	*Orqueta.*
18223.	*Rollisa Ancha.*
18224.	*Jamaica* (Trinidad).

18225. ASPARAGUS ACUTIFOLIUS.

From San Giovanni a Teduccio, Italy. Received through Dammann & Co., March 26, 1906.

Roots imported for use in experiments to create a new hybrid asparagus which will resist the asparagus rust.

18226. HOSACKIA PURSHIANA. **Dakota vetch.**

From Dickinson, Dak. Received through the Dickinson Subexperiment Station, March 26, 1906.

18227. GLYCINE HISPIDA. **Soy bean.**

From Khabarovsk, East Siberia. Received through Director Gagin of the Khabarovsk Experiment Field, March 26, 1906.

Tchernie bobi. "A black variety of *Soja hispida*, which is cultivated in several places in Manchuria and Amur land." (*Gagin.*)

18228. PUERARIA THUNBERGIANA. **Kudzu.**

From Philadelphia, Pa. Received through H. A. Dreer (Incorporated), March 27, 1906.

(See Nos. 9227 and 9228, Inventory No. 9.)

18229. AVENA SATIVA. **Oat.**

From Augusta, Ga. Received through the N. L. Willet Drug Company, February 1, 1906.

Appler Rustproof. Special selection of seed from No. 17452.

18230. AVENA SATIVA. **Oat.**

From Richmond, Va. Received through T. W. Wood & Sons, January 27, 1906.

Burt. Special selection of seed from No. 17451.

18231. SECHIUM EDULE. **Chayote.**

From New Orleans, La. Received through the J. Steckler Seed Company, March, 1906.

18232. CUCUMIS MELO. **Winter muskmelon.**

From Ispahan, Persia. Received through Mr. Frank Benton (No. 33), March 27, 1906.

"Seed of a winter muskmelon grown extensively about Ispahan, Persia. It keeps, if put in a cool, airy place, all winter, and may be used at any time. Bears transportation well; many are taken over rough roads on pack animals two to three hundred miles. Oblong, light yellow, netted finely; flesh light yellow, semitransparent or watery; quite juicy; fair quality. Said to succeed best on slightly alkaline soil." (*Benton.*)

18233. BETA VULGARIS. **Sugar beet.**

From Wellsboro, Ind. Received through the West Michigan Sugar Company, March 27, 1906.

Knauer's Mangold.

18234 and 18235. AMYGDALUS spp.

From Quetta, British India. Presented by Lieut. W. L. Maxwell, One Hundred and Twenty-Seventh Baluchistan Light Infantry. Received March 24, 1906.

18234. AMYGDALUS PERSICA. **Peach.**

Quetta.

18235. AMYGDALUS PERSICA LAEVIS. **Nectarine.**

Quetta.

"These seeds were taken from the best trees in Quetta. Quetta is nearly 6,000 feet high; summer temperature, 100° F. in the shade at times; winter temperature known to drop below zero, and severe frost is known to continue for weeks at a time." (*Maxwell.*)

18236 and 18237. CHENOPODIUM QUINOA. **Quinoa.**

From La Paz, Bolivia. Received through Señor M. V. Ballovian, Ministerio de Colonias y Agricultura, March 24, 1906.

18236. CHENOPODIUM QUINOA. **Quinoa.**

Quinoa amarga or *Common.*

18237. CHENOPODIUM QUINOA. **Quinoa.**

Arrocillo or *Royal.*

(See Nos. 2931, 3073, and 3074, Inventory No. 7.)

18238 to 18240.

From Chaman, Baluchistan. Presented by Lieut. W. L. Maxwell, One Hundred and Twenty-Seventh Baluchistan Light Infantry. Received March 29, 1906.

Plants and cuttings, as follows:

18238. AMYGDALUS COMMUNIS. **Almond.**

18239. AMYGDALUS PERSICA. **Peach.**

18240. PUNICA GRANATUM. **Pomegranate.**

18241. VICIA FABA. **Broad bean.**

From Buenos Ayres, Argentina. Presented by Mr. H. B. Vannote, 11 and 13 Vandewater street, New York, N. Y. Received March 26, 1906.

18242 and 18243. PRUNUS spp. **Cherry.**

From Dreshertown, Pa. Received through Thomas Meehan & Sons, March 31, 1906.

Trees to be used as stocks upon which to bud Japanese flowering cherries, as follows:

18242. PRUNUS AVIUM. **Mazzard cherry.**

18243. PRUNUS MAHALEB. **Mahaleb cherry.**

18244. AGAVE RIGIDA SISALANA. **Sisal.**

From Miami, Fla. Collected by Mr. L. H. Dewey, March 8 and 14, 1906. Received March 31, 1906.

Bulbils secured for introduction into Porto Rico.

18245 and 18246. AVENA SATIVA. **Oat.**

From Örebro, Sweden. Received through C. A. Hagendahl's Son, March 28, 1906.

18245. *White.* **18246.** *Black.*

18247. MEDICAGO SATIVA. **Alfalfa.**

From Milwaukee, Wis. Received through the Wernich Seed Company, March 29, 1906.

Turkestan.

18248 to 18255. SOLANUM TUBEROSUM. **Potato.**

From La Paz, Bolivia. Received through Señor M. V. Ballovian, Ministerio de Colonias y Agricultura, March 24, 1906.

18248. *Ymilla.* Raised in La Paz.

18249. *Sicha.* Raised at the foot of the Sub-Andine chains.

18250. *Phureja.* Raised on the table-lands.

18251. *Luqui.* Raised on the table-lands.

18252. *Queni.* Raised in La Paz.

18253. *Apharu.* Raised on the table-land of Bolivia.

18254. *Monda.* Raised on the table-lands.

18255. *Khati.* Raised in La Paz.

18256 to 18277.

From Peking, China. Received at the Plant Introduction Gardens, Chico, Cal., through Mr. F. N. Meyer, February 26 and 27, 1906.

Seeds and cuttings of Chinese plants, the seeds indicated by the letter "a" following the number, as follows:

18256. JUGLANS REGIA. **Persian walnut.**

From Peking. "(No. 3a.) A very large, hard-shelled variety said to have come from the western mountains, where it gets quite cold." (*Meyer.*)

18257. JUGLANS REGIA. **Persian walnut.**

From Peking. "(No. 4a.) A hard-shelled, sweet variety said to have come from the mountains 40 miles north of Peking; will probably prove hardy quite far north." (*Meyer.*)

18256 to 18277—Continued.

18258. Glycine hispida. **Soy bean.**

From Pee-san. "(No. 5a.) This soy bean is extensively cultivated in the mountains north of Peking and is highly esteemed for human food; requires but little irrigation, and is well worth trying in the arid West." (*Meyer.*)

18259. Glycine hispida. **Soy bean.**

From Tschang-ping-tsu. "(No. 6a.) This bean is grown in the northern country as a nitrogen-supplying crop with sorghum, corn, or millet; does not scatter much when ripe, but seems to be late in ripening." (*Meyer.*)

18260. Prunus armeniaca. **Apricot.**

From Peking. "(No. 7a.) The so-called Chinese almond, but it is really a sweet-kerneled apricot. It is considered a fine little nut by the Chinese, who eat them salted after having them soaked in water to get rid of the skin." (*Meyer.*)

18261. Prunus armeniaca. **Apricot.**

From Peking. "(No. 8a.) The same as No. 7a (S. P. I. No. 18260), but inferior in quality; both are probably the same plant. They are said to be a special strain of apricots, being grown only for their seeds." (*Meyer.*)

18262. Amygdalus persica. **Peach.**

From Peking. "(No. 9a.) Seeds collected from a tree growing in the German Legation grounds at Peking. This tree, which is about 40 feet high, is a most heavy bearer and looks like a remarkably thrifty peach tree. Its leaves are much darker green than those of the cultivated ones. I was told that it is a fine ornamental tree in the spring, being one sheet of rose-colored blossoms." (*Meyer.*)

18263. Juglans regia. **Persian walnut.**

From Tientsin. "(No. 10a.) A small variety bought in Tientsin. May prove to be very hardy, as the nuts are small and hard." (*Meyer.*)

18264. Xanthoceras sorbifolia.

From Wei-tsan Mountains. "(No. 11a.) A small ornamental tree belonging to the horse-chestnut family. Is very well fit for a solitary lawn tree in a small garden, as it grows only to a small size and makes a dense head of foliage." (*Meyer.*)

18265. Quercus dentata. **Oak.**

From Ming Tombs, north of Peking. "(No. 12a.) This oak attains a medium size, has very large, dark green leaves, and is well worth growing; looks quite different from other oaks. Collected on the grounds of the Ming Tombs, 30 miles north of Peking, where it gets extremely cold. The trees will probably prove hardy quite far north." (*Meyer.*)

18266. Diospyros lotus. **Persimmon.**

From Pee-san. "(No. 13a.) A small persimmon used as stock for the seedless one." (*Meyer.*)

18267. Catalpa bungei. **Catalpa.**

From Wei-tsan Mountains. "(No. 78.) Young trees of which the parents have grown to a very large size in an old temple garden. This tree is one of the finest flowering trees in the world." (*Meyer.*)

18268. Tamarix sp.

From Wei-tsan Mountains. "(No. 83.) A very graceful bush, suitable for planting along the water's edge." (*Meyer.*)

18269. Populus sp. **Poplar.**

From Wei-tsan Mountains. "(No. 84.) This poplar is often found growing in old temple gardens; it has whitish bark and attains a very large size. Probably the same as No. 15 (S. P. I. No. 16915.)" (*Meyer.*)

18256 to 18277—Continued.

18270. JASMINUM NUDIFLORUM. **Jasmine.**

From Wei-tsan Mountains. "(No. 85.) A jasmine with green stems and yellow flowers, adapted for terraces and walls." (*Meyer.*)

18271. LYCIUM sp. **Matrimony vine.**

From Palitswang. "(No. 86.) A matrimony vine which is trained on one stem with all the small branches drooping down like a weeping tree; is loaded in the fall with red berries." (*Meyer.*)

18272. PISTACIA CHINENSIS. **Pistache.**

From Wei-tsan Mountains. "(No. 89.) The carpellate form of the Chinese pistache. A rather ornamental, small tree; bears heavy bunches of small, scarlet-purplish-colored berries." (*Meyer.*)

18273. PISTACIA CHINENSIS. **Pistache.**

From Wei-tsan Mountains. "(No. 90.) The staminate form of the Chinese pistache. A very ornamental tree with graceful, pinnate foliage; grows to very large dimensions." (*Meyer.*)

18274. POPULUS sp. **Poplar.**

From the mountains near Fangshan. "(No. 134.) A poplar found growing in a ravine; probably a tall-growing variety." (*Meyer.*)

18275. MORUS ALBA. **Mulberry.**

From the mountains near Fangshan. "(No. 135.) Tall sprouts found growing by the roadside; may be a new kind." (*Meyer.*)

18276. (Undetermined.)

From the mountains near Fangshan. "(No. 136.) Cuttings of a semiclimbing, low shrub." (*Meyer.*)

18277. KOELREUTERIA PANICULATA. **Varnish tree.**

From Wei-tsan Mountains. (No. 137.)

18278 to 18293.

From Peking, China. Collected by Mr. F. N. Meyer and sent direct to the Arnold Arboretum, Jamaica Plains, Mass. Received during the winter of 1905–6.

Cuttings of Chinese plants, as follows:

18278. EUONYMUS sp.

From Shan-hai-kwan. "(No. 4.) A low-growing shrub with corky wings on its branches; found in semishady situations." (*Meyer.*)

18279. (Undetermined.)

From Shan-hai-kwan. "(No. 16.) A low, spreading bush with edible red berries; grows between rocks and in sunny as well as shady situations." (*Meyer.*)

18280. AMPELOPSIS sp.

From Shan-hai-kwan. (No. 17.)

18281. AMPELOPSIS sp.

From Chang-li. (No. 18.)

18282. PRUNUS sp.

From Shan-hai-kwan. (No. 51.)

18283. SPIRAEA sp.

From Shan-hai-kwan. "(No. 20.) A small, shrubby *Spiraea* resembling *S. thunbergii;* found growing between rocks and exposed places." (*Meyer.*)

18284. AMPELOPSIS sp.

From Chang-li. (No. 21.)

18278 to 18293—Continued.

18285. ACTINIDIA sp. (?)

From Hwai-jou. (No. 22.)

18286. EUONYMUS sp.

From Hwai-jou. "(No. 24.) A very striking *Euonymus* with red leaf tops, resembling *E. bungeanus* but bearing a much larger quantity of fruit." (*Meyer.*)

18287 to 18289. (Undetermined.)

From Shan-hai-kwan. (Nos. 52 to 54.) Cuttings of unidentified shrubs.

18290. PRUNUS ARMENIACA. **Apricot.**

From Shan-hai-kwan. "(No. 55.) A wild apricot growing in a ravine near an old temple." (*Meyer.*)

18291. SPIRAEA sp. (?)

From Shan-hai-kwan. "(No. 56.) Found growing between the rocks in the mountains near Shan-hai-kwan." (*Meyer.*)

18292. AMPELOPSIS sp.

From Chang-li. "(No. 99.) A vine growing on rocky places in the mountains; has deeply lobed leaves and white berries." (*Meyer.*)

18293. AMPELOPSIS sp.

From Chang-li. "(No. 100.) A vine resembling *A. vetchii*, but with both entire and three-lobed leaves; assumes beautiful fall colors and though small and apparently tender is well worth trying." (*Meyer.*)

18294 to 18296.

From Peradeniya, Ceylon. Received through J. C. Willis, director of Royal Botanic Gardens, February 26, 1906.

18294. CROTALARIA sp.

Imported for experimental purposes in connection with cover crops for tea and coffee plantations.

18295 and 18296. ARACHIS HYPOGAEA. **Peanut.**

18295. *Mauritius.* **18296.** (Unnamed.)

18297 and 18298. IPOMOEA BATATAS. Sweet potato.

From Kingston, Jamaica, British West Indies. Presented by Dr. William Fawcett, director of Hope Gardens. Received March 29, 1906.

"Tubers of the two varieties of white-skinned potato which thrive best here." (*Fawcett.*)

18297. *John Barnett.* **18298.** *Law.*

18299. HUMULUS LUPULUS. Hop.

From North Yakima, Wash. Presented by Mr. H. B. Scudder. Received February, 1906.

Semsch. Seeds produced on vine of S. P. I. No. 5787, in 1905. "Probably these seeds were results of pollination with pollen from the male plants of the common Yakima hop. They should be planted for selection of the best seedlings." (*Fairchild.*)

18300 and 18301. CANNA spp. Canna.

From Palermo, Sicily. Presented by Prof. Dr. A. Borzi, director of the Botanic Gardens. Received March 30, 1906.

18300. CANNA INDICA. **18301.** CANNA IRIDIFLORA.

18302. ZEA MAYS. **Corn.**

From Callao, Peru. Presented by Mr. C. B. Cisneros. Received March 12, 1906.

18303 to 18309.

From Teheran, Persia. Presented by Mr. John Tyler, United States vice-consul-general. Received March 23, 1906.

Seeds, as follows:

18303. CUCUMIS MELO. **Muskmelon.**

A white-skinned variety.

18304. CUCUMIS MELO. **Muskmelon.**

Kharbuzzah. "This is thought to be a corruption of *khar poozah*, khar meaning ass and poozah snout or nose, possibly on account of its oblong shape. The highest quality of this kind is produced at a village 16 miles north of Ispahan, called Gurg Ab (Wolf Water), being irrigated with water impregnated with alkaline elements. The flavor is agreeably sweet and pleasant, and approved by almost every individual taste. When ripe, however, on account of the delicacy of the texture of the skin and the crispness of the inner substance it can not be transported without damage from the place where it is grown. It is said that the vibration caused to the ground by a horse cantering within a few yards will split it up, and that to pierce it with a pin is sufficient to make a circle of cracks. Such as are brought to Teheran, and those taken to towns nearer the area of growth, are cut before they are ripe and consequently lose much of their delicacy of flavor. The principal supply for the Teheran market is produced from 12 to 30 miles away, and the fruits are of various qualities, according to the soil and water supply. None are grown in the immediate vicinity of the city. The color of the *Kharbuzzah* in the best qualities is a pale yellow, but there are some nearly white or of a cream color." (*Tyler.*)

18305. CUCUMIS MELO. **Muskmelon.**

Tâlabee (Desired). "In shape a spheroid, of a greenish tinge both inside and out, although some are inclined to yellow. When good, their flavor is pleasant and rather sweet. If, however, they are deficient in sweetness, sugar may be added with advantage. In this they differ from the *Kharbuzzah*, which is not improved by sugar; in fact, many people eat it with pepper and salt. Their average weight is from 4 to 5 pounds, and I do not think that I have ever seen one that exceeded a batman (6½ pounds)." (*Tyler.*)

18306. CUCUMIS MELO. **Muskmelon.**

Garmack (Little heat). "This variety resembles in shape, size, and flavor, though not so sweet, the *Tâlabee.* It is less delicate in texture, and if of a poor quality is not much better than a Swede turnip; but as it is the first to come to market it finds considerable favor. If, however, it lacks sweetness its flavor coalesces very well with pounded sugar." (*Tyler.*)

18307. CUCUMIS SATIVUS. **Cucumber.**

Persian Khear. "A smooth-skinned variety about 5 or 6 inches in length, and the larger 6 or 7 inches in circumference. They are crisp in texture and pleasant to the taste. I think they are a little sweeter than ours, and consequently preferred by the natives. These plants, both melons and cucumbers, are planted on the margin of a trench with a bank about 4 feet wide when quite dry for the plant to lie upon, for if the fruit comes in touch with the irrigation water it brings on the rot." (*Tyler.*)

18308. CITRULLUS VULGARIS. **Watermelon.**

Andavânah. "Probably a corruption of *Hind-daneh*, meaning Indian grain or seed, partially confirming the common belief that it was originally brought from India, although it has been extensively cultivated in Persia for centuries. In some districts of eastern Persia it attains an immense size, weighing upward of 100 pounds, but in Teheran it rarely exceeds a third of that weight. Being very cheap in price, it is looked upon as a generous addition to the diet of the poor." (*Tyler.*)

18303 to 18309—Continued.

18309. ANDROPOGON SORGHUM. **Sorghum.**

(No data.)

18310. PHASEOLUS MAX. **Mung bean.**

From Barbados, British West Indies. Presented by Hon. D. Morris, Commissioner of Agriculture for the West Indies. Received April 6, 1906.

Woolly Pyrol.

18311 to 18315. ARACHIS HYPOGAEA. **Peanut.**

From Peradeniya, Ceylon. Presented by Mr. J. C. Willis, director of Royal Botanic Gardens. Received April 6, 1906.

18311. *Tanjore.*

18312. *Mauritius.*

18313. *Pondicherry.*

18314. *Barbados.*

18315. *Brazil.*

18316 to 18318. DIOSCOREA spp. **Yam.**

From Mayaguez, P. R. Presented by the Agricultural Experiment Station. Received April 4, 1906.

18316. DIOSCOREA ACULEATA GUINEA.

18317. DIOSCOREA TRIFIDA.

A white variety.

18318. DIOSCOREA TRIFIDA.

A purple variety.

18319 and 18320.

From Manila, P. I. Presented by Mr. William S. Lyon, horticulturist, Bureau of Agriculture. Received April 3, 1906.

18319. XANTHOSOMA sp. **Yautia.**

"Locally known as *Gabe de China*. Chief distinction seems to be in the size of the main rootstock, which grows very large. Grown alongside of introduced *Xanthosoma*, it made in eight months a main rootstock as large and half again, weighing, when green, nearly 2 pounds." (*Lyon.*)

18320. COLOCASIA sp.

Most common *Gabe* of the Philippine Islands.

18321. CANAVALIA ENSIFORMIS. **Sword bean.**

From Mayaguez, P. R. Presented by the Agricultural Experiment Station. Received March 27, 1906.

18322 and 18323. SACCHARUM OFFICINARUM. **Sugar cane.**

From Cienfuegos, Cuba. Presented by Dr. Robert M. Grey, Harvard Botanical Station, Central Soledad. Received March 27, 1906.

Samples of each of the following hand-fertilized sugar cane seed:

18322. *Crystallina* × *Crystallina.*

18323. *Crystallina* (female) × *Java seedling No. 51* (male).

18324. LILIUM PHILIPPINENSE. **Lily.**

From Thetford, Vt. Received through Mr. George S. Worcester, April 10, 1906.

18325. PELTANDRA SAGITTAEFOLIA. **Wampee.**

From Cat Island, South Carolina. Received through Mr. John Tull, April 9, 1906.

"The roots are extensively eaten by the colored natives." (*Tull.*)

18326. ANDROPOGON SORGHUM. **Sorghum.**

From Bombay Presidency, India. Presented by Prof. G. A. Gammie, economic botanist, Ganeshkhind Botanical Gardens, Kirkee, Poona, India. Received April 9, 1906.

"Seed of a dwarf variety of sorghum cultivated in the Punch Mahals District of the Bombay Presidency. It is locally known by the name of *Rátádia* and grows to the height of 2½ to 3½ feet." (*Gammie.*)

18327. POA TRIVIALIS. **Rough-stalked meadow grass.**

From Paris, France. Received through Vilmorin-Andrieux & Co., April 7, 1906.

18328. CUCURBITA MELANOSPERMA. **Ecuador melon.**

From Quito, Ecuador. Presented by Mr. S. Ordonez M. Received April 9, 1906.

"This plant is native to this country, where it is cultivated quite extensively and used for food for man as well as for stock. Although a perennial, it is more commonly treated as an annual and planted with corn. It is also planted along walls and at the foot of trees, upon which it will climb and produce melons continuously. The plant will not endure severe frost, and grows where the temperature ranges from 14° to 25° C.

"When used as human food the melon, as long as it is so soft that a finger nail can be driven into the shell, is simply cooked and made into different dishes with butter and salt; when ripe it is eaten cooked, with milk added at the table. For stock it is used ripe and simply cut to pieces; when cooked, however, it is far better, especially for stock and milch cows.

"The melons average 20 to 30 pounds each. The pulp is white and contains sugar and some starch. When completely ripe the shell is very hard and the seeds black, giving the melons much the appearance of a watermelon. The ripe melons can easily be kept a year in a dry and ventilated place, this condition making them valuable for winter feed. There are two varieties—the white-shelled and the green and white striped. These seeds are of the latter variety." (*S. Ordonez M.*)

18329 to 18331.

From Manila, P. I. Presented by Mr. William S. Lyon, horticulturist, Bureau of Agriculture. Received April 3, 1906.

18329. CANAVALIA ENSIFORMIS. **Knife bean.**

"'*Marautong*' of the Pampangans. The young and tender pods make an excellent snap bean, and the green as well as the fully ripe seeds are a good substitute for Lima or Haricot beans. This variety, while prostrate and rambling, is distinctively nontwining. It makes pods in two months and matures seeds in four months from planting." (*Lyon.*)

18330. CROTALARIA JUNCEA. **Sunn hemp.**

"This requires rich soil, abundant moisture, and close planting to produce long fiber. If planted wide and kept pinched it becomes very floriferous and an ornamental acquisition to the garden." (*Lyon.*)

18331. PACHYRHIZUS ANGULATUS. **Yam bean.**

18332. BETA VULGARIS. **Sugar beet.**

From Raunitz, near Wettin, Germany. Received from Mr. G. Wesche, through Mr. E. Nettwall, of Prague, Bohemia, April 11, 1906.

Wesche's Ertragreichste, or *Richest in Yield.*

18333. EUTREMA WASABI. **Japanese horse-radish.**

From Yokohama, Japan. Received through the Yokohama Nursery Company, April 11, 1906.

(For description see No. 9891, Inventory No. 10.)

18334 to 18337. ARACHIS HYPOGAEA. **Peanut.**

From Suffolk, Va. Received through the Suffolk Peanut Company, April 13, 1906.

A collection of peanuts obtained for foreign exchange, as follows:

18334. *Virginia.*
18335. *Bunch.*
18336. *Carolina.*
18337. *Spanish.*

18338. VICIA SATIVA. **Common vetch.**

From Svalöf, Sweden. Received through Allmänna Svenska Utsädesaktiebolaget, April 13, 1906.

18339. HEDYSARUM SIBIRICUM.

From Groningen, Holland. Presented by the Jardin Botanique de Groningen. Received April 12, 1906.

18340. VICIA FABA. **Broad bean.**

From London, England. Presented by Mr. S. E. Wynne. Received April 14, 1906.

Harlington White Windsor. "To grow: Plant in good, strong, rich soil in January or February for main crop, and from February to May for successive crops. Plant in rows 2 feet to 30 inches apart; when the plants are about 30 inches high cut off the tops; they need no staking. Gather the pods when young, when the seeds are not over three-fourths inch in length.

"To cook: Use plenty of water, adding a heaped tablespoonful of salt to each half gallon. Shell the beans, put them into boiling water, and boil rapidly until tender—about fifteen minutes for very young beans. Drain them thoroughly, and serve quite separately, but with a sauceboat of parsley sauce as an accompaniment. The beans are excellent with boiled bacon, but they must be cooked alone, never with the meat. If very young they should be cooked fifteen minutes; if older, twenty to twenty-five minutes, but do not overcook them. Half a peck of the pods should yield a good dish. In England they are in season in July and August.

"Average cost, 6s. per peck." (*Wynne.*)

18341. CASTANEA SATIVA. **Chestnut.**

From Yokohama, Japan. Received through the Yokohama Nursery Company, April 14, 1906.

18342. SOLANUM JAMESII.

From Grand Island, Nebr. Presented by Mr. E. Corbin. Received April 17, 1906.

(See No. 10473, Inventory No. 11.)

18343 to 18345. ANDROPOGON SORGHUM.

From Lawrence, Kans. Received through F. Barteldes & Co., April 17, 1906.

18343. *Jerusalem corn* sorghum.
18344. *Red* kafir corn.
18345. *Yellow* milo.

18346 to 18357.

From Gatton, Queensland, Australia. Presented by Prof. John Mahon, principal of the Queensland Agricultural College. Received April 18, 1906.

18346. ANDROPOGON SERICEUS.
18347. ANDROPOGON INTERMEDIUS.
18348. ANTHISTIRIA CILIATA.
18349. CHLORIS DIVARICATA.
18350. CHLORIS TRUNCATA.
18351. CHRYSOPOGON PARVIFLORA.
18352. ERAGROSTIS BROWNEI.
18353. ERIOCHLOA PUNCTATA.
18354. ISCHAEMUM PECTINATUM.
18355. PANICUM DECOMPOSITUM.
18356. PANICUM DIVARICATISSIMUM.
18357. ANDROPOGON AUSTRALIS.

18358 to 18381.

From Hanatote, Ugo, Japan. Presented by Mr. S. Nakagawa, Riku-u Agricultural Experiment Station. Received April 12, 1906.

Seeds, as follows:

18358. BRACHYPODIUM JAPONICUM.
18359. BRACHYPODIUM JAPONICUM.
18360. BROMUS UNIOLOIDES.
18361. CASSIA MIMOSOIDES.
18362. COIX LACRYMA-JOBI.
18363. DESMODIUM GARDNERI.
18364. ELEUSINE CORACANA.
18365. ERAGROSTIS FERRUGINEA.
18366. ERIOCHLOA VILLOSA.
18367. HOLCUS LANATUS.
18368. INDIGOFERA TINCTORIA.
18369. LESPEDEZA BUERGERI.
18370. LESPEDEZA STRIATA.
18371. LOTUS CORNICULATUS JAPONICUS.
18372. MISCANTHUS SINENSIS.
18373. PASPALUM THUNBERGII.
18374. PENNISETUM JAPONICUM.
18375. CHAETOCHLOA GLAUCA.
18376. CHAETOCHLOA PACHYSTACHYA.
18377. CHAETOCHLOA VIRIDIS.
18378. CHAETOCHLOA VIRIDIS GIGANTEA.
18379. SPODIOPOGON COTULIFER.
18380. VICIA AMOENA LANATA.
18381. VICIA UNIJUGA.

18382. MACADAMIA TERNIFOLIA. **Queensland nut.**

From Brisbane, Queensland, Australia. Presented by Prof. F. Manson Bailey. Received April 18, 1906.

"The Queensland nut is well worthy of cultivation in Ceylon, not only as an ornamental or windbelt tree, but also for its dainty product. That it is suited to our climate may be judged from the growth of the tree at Peradeniya, where, having been introduced in 1868, it is now 40 to 50 feet high, with a spreading habit. It is indigenous to the northeastern parts of Australia, and is commonly known there as the 'Queensland nut.' It has also been referred to as the 'Australian hazelnut,' while the late Baron von Mueller described it as 'the nut tree of subtropical eastern Australia.' The tree is at first of a rather slow-growing habit, but begins to bear fruit when 6 or 7 years old, increasing in fertility until it reaches the age of 15 years.

"A writer in the Sydney Mail some time ago stated that the tree fruited freely from the time it was 8 years old, bearing at the age of 13 1,200 nuts, with which every branch was laden. Mr. W. J. Allen, in the Agricultural Gazette of New South Wales for October of last year, draws attention to the importance of growing the Queensland nut for the market. 'One farmer,' he states, 'has over an acre of these nuts, which are doing well with him and which prove themselves very profitable, finding ready sale for them at from 6d. to 7d. per pound. The nuts are retailed in the Sydney fruit shops at 1s. per pound, and are very well liked when they become known. At present the supply in our own state can not be anything like equal to the demand, and it seems to me that if these nuts were produced in quantities we should be able to find a ready sale for large supplies in Great Britain and America.' Mr. Allen describes the nut as 'one of the best-flavored on the market,' and he would recommend all those who have not tasted them to buy a few and try them.

18382—Continued.

"The nuts are borne on spikes 4 to 7 inches long, each being of the size and shape of large marbles, about three-fourths of an inch in diameter. These have an agreeable flavor, which according to some tastes is richer than that of the hazelnut. Their chief objection is, perhaps, their very hard shell, which requires extra strong nutcrackers to break.

"The tree belongs to the order Proteaceae, to which belongs also the well-known Grevillea or 'Silky Oak.' It is evergreen, with a low, branching habit; thrives best in good damp soil, and is propagated by seed. The leaves are in whorls of 3 (ternate) or 4, as the name indicates, and the flowers are creamy white, in racemes 4 to 6 inches in length, and sweet-scented." (*H. F. Macmillan, in Tropical Agriculturist, Feb., 1906.*)

18383 to 18387.

From Singapore, Straits Settlements. Presented by Prof. Henry N. Ridley, director, Botanical Gardens. Received April 17, 1906.

A collection of aroids, as follows:

18383. ALOCASIA INDICA.
18384. ALOCASIA INDICA.
18385. XANTHOSOMA VIOLACEUM.
18386. AMORPHOPHALLUS SATIVUS.
18387. AMORPHOPHALLUS CAMPANULATUS.

18388 and 18389. ANDROPOGON SORGHUM. **Sorghum.**

From Bassorah, Persian Gulf. Received through Mr. Herbert W. Poulter, April 16, 1906.

18388.

Tappo Dari. "The best quality obtainable; is planted around Bagdad and Amara. The word *Tappo*, specifying a better quality, is Turkish and represents the name of the branch of the court which looks after the collecting of the taxes on the ground. It appears that the *Dari* coming from lands held by the court was better looked after, and so a better quality obtained; hence the name *Tappo*." (*Poulter.*)

18389.

Common Dari. Planted along the Euphrates River.

18390. CYPERUS ESCULENTUS. **Chufa.**

From Valencia, Spain. Received through Hon. Henry A. Johnson, United States consul, April 19, 1906.

18391. MEDICAGO SATIVA. **Alfalfa.**

From Logan, Mont. Received through Mr. Martin Jacoby, April 18, 1906.

Turkestan alfalfa grown in 1905 from No. 9455.

18392. VITIS VINIFERA. **Grape.**

From Salonica, Turkey. Presented by Mr. J. Henry House. Received April 2, 1906.

Cuttings of the long finger grape *Valandova;* much prized for shipping to northern countries from Salonica.

18393. ANTIDESMA BUNIUS.

From Manila, P. I. Presented by Mr. W. S. Lyon, horticulturist of the Manila Bureau of Agriculture. Received April 18, 1906.

"*Bignay* of the Malays. A medium-sized, evergreen tree; highly ornamental in or out of fruit. Fruit (edible) in racemes about the size and color of the large, red *Versailles* currant." (*Lyon.*)

18394. TRIFOLIUM PRATENSE. **Red clover.**

From Riga, Russia. Received through Mr. F. Lassman, April 20, 1906.

18395. CUCURBITA MELANOSPERMA. **Ecuador melon.**

From Quito, Ecuador. Presented by Mr. S. Ordonez M. Received April 21, 1906.

White-shelled variety. (For description see No. 18328.)

18396. PISUM ARVENSE. **Field pea.**

From Ispahan, Persia. Received through Mr. Frank Benton, April 2, 1906.

"No. 34. A clover-like plant grown as a forage crop about Ispahan and known as *Guergueruh*. It is said to be an annual and seems to be used as a winter cover for land, the same as crimson clover in the United States. The plants are quite green in January after numerous frosts." (*Benton.*)

18397. CUCURBITA PEPO. **Pumpkin.**

From Shiraz, Persia. Received through Mr. Frank Benton, April 2, 1906.

"No. 35. A small, long, salmon-colored squash; enlarged at blossom end. The natives praise the quality, but as prepared for me it was watery and of poor flavor." (*Benton.*)

18398. CUCURBITA MAXIMA. **Squash.**

From Shiraz, Persia. Received through Mr. Frank Benton, April 2, 1906.

"No. 36. A medium-sized, oval, slate-colored, hard-skinned squash of indifferent quality on sale in the markets of Shiraz, in February, where seed was taken from a freshly cut specimen. Might be useful for stock. The region about Shiraz is dry and depends upon irrigation; elevation about 5,000 feet." (*Benton.*)

18399. FRAXINUS ORNUS. **Ash.**

From Nizamabad, central Persia. Received through Mr. Frank Benton, April 2, 1906.

"No. 37. Seeds taken from a cultivated ornamental tree growing near a pool of water at Nizamabad." (*Benton.*)

18400. CARICA PAPAYA. **Papaw.**

From Karachi, province of Sind, India. Received through Mr. Frank Benton, April 16, 1906.

"No. 39. Seed of a tree 20 to 30 feet tall, with large leaves, bearing fruits the size of a small muskmelon, greenish yellow outside when ripe; orange-yellow within. Grows commonly in the warmer parts of India." (*Benton.*)

18401. BRASSICA RAPA. **Turnip.**

From Quetta, Baluchistan. Received through Mr. Frank Benton, April 16, 1906.

"(No. 45.) The roots, which grow to considerable size, are flat in form and are bright crimson outside. The flesh is white, firm, and of a good quality." (*Benton.*)

18402. IPOMOEA BATATAS. **Sweet potato.**

From Quetta, Baluchistan. Received through Mr. Frank Benton, April 16, 1906.

"(No. 46.) Large sweet potatoes; red outside and quite sweet. Purchased in the market at Quetta and probably grown in the lowlands of the Indus." (*Benton.*)

18403 to 18407.

From Quetta, Baluchistan. Received through Mr. Frank Benton, April 16, 1906.

Seeds, as follows:

18403. Daucus carota. **Carrot.**
(No. 47.)

18404. Pinus gerardiana. **Pine.**
(No. 48.)

18405. Cucurbita maxima. **Squash.**
(No. 49.)

18406. Cucurbita maxima. **Squash.**
(No. 50.)

18407. Vitis vinifera. **Grape.**
(No. 51.)

18408. Sechium edule. **Chayote.**

From Mayaguez, P. R. Received through the Agricultural Experiment Station, April 26, 1906.

Fruits of a variety of chayote which is covered with spines.

18409 and 18410. Saccharum officinarum. **Sugar cane.**

From Bridgetown, Barbados. Presented by Hon. Sir Daniel Morris, K. C. M. G., Commissioner of Agriculture for the British West Indies. Received April 23, 1906.

18409. *Collynns seedling.* **18410.** *Sealy seedling.*

18411. Andropogon sorghum. **Sorghum.**

From Roswell, N. Mex. Received through Mr. G. S. Nutter, April 19, 1906.

African sumac cane.

18412. Trifolium pratense. **Red clover.**

From Baltimore, Md. Received through W. G. Scarlett & Co., April 23, 1906.

Austrian.

18413 to 18421.

From New York, N. Y. Received through Henry Nungesser & Co., April 23, 1906.

A collection of seeds, as follows:

18413. Agrostis canina. **Rhode Island bent-grass.**

18414. Alopecurus pratensis. **Meadow foxtail.**

18415. Arrhenatherum elatius. **Tall meadow oat-grass.**

18416. Bromus erectus.

18417. Festuca elatior. **Tall fescue.**

18418. Medicago sativa. **Alfalfa.**
Provence.

18419. Poa compressa. **Canada bluegrass.**

18420. Trifolium incarnatum. **Crimson clover.**

18421. Trifolium medium. **Mammoth clover.**

18422. Vicia villosa. **Hairy vetch.**

From New York, N. Y. Received through Henry Nungesser & Co., April 23, 1906.

18423. Echinacea helianthi.

From Riverton, N. J. Received through Henry A. Dreer (Incorporated), Philadelphia, Pa., April 23, 1906.

Plants obtained for hybridizing experiments.

18424. Canna sp. **Canna.**

From Guam. Presented by Mr. H. L. W. Costenoble, superintendent of the Guam Agricultural Experiment Station. Received April 23, 1906.

"Seed of the native Guam canna, which grows to a height of 8 feet and produces blossoms uninterruptedly." (*Costenoble.*)

18425. Medicago sativa. **Alfalfa.**

From Marblehead, Mass. Received through J. J. H. Gregory & Son, April 23, 1906.

Turkestan.

18426 and 18427.

From Juarez, Chihuahua, Mexico. Presented by Mr. Elmer Stearns, of the Agricultural College and Station. Received April 25, 1906.

18426. Zea mays. **Corn.**

Flint corn from Budapest.

18427. (Undetermined.) **"Tree pea."**

18428. Passiflora sp.

From Tecalitlan, Jalisco, Mexico. Presented by Mr. C. V. Mead. Received April 20, 1906.

18429 to 18458.

From Shanghai, China. Received through Mr. F. N. Meyer, April 28, 1906.

A miscellaneous collection of plants and seeds, the seeds being indicated by the letter "a" following the numbers, as follows:

18429. Juncus sp. **Rush.**

From Soochow. "(No. 521.) A variety of matting rush collected near Soochow. They must be grown in muddy soil with 2 to 3 inches of standing water." (*Meyer.*)

18430. Juncus sp. **Rush.**

From Soochow. "(No. 523.) The rush from which pith wicks for the Chinese oil lamps are made." (*Meyer.*)

18431. (Undetermined.) **"Kaba."**

From Soochow. "(No. 525.) A new vegetable, said to be very delicious; must be grown in muddy soil with 3 to 4 inches of water." (*Meyer.*)

18432. Gymnocladus chinensis.

From Hanchau. "(No. 202a.) A tall-growing tree with naked branches, bearing heavy pods, which are used by the Chinese as a substitute for soap. Chinese name *Soa Ache*. The tree may be of use as an ornamental tree in the Southern States." (*Meyer.*)

18433. Gymnocladus chinensis.

From Hanchau. "(No. 203a.) A small-podded soap tree; otherwise the same description applies to it as to No. 18432." (*Meyer.*)

18429 to 18458—Continued.

18434. VICIA FABA. **Broad bean.**

From Shanghai. "(No. 204a.) A variety of broad bean grown as a winter crop on rice fields." (*Meyer.*)

18435. CORCHORUS CAPSULARIS. **Jute.**

From Shanghai. "(No. 210a.) Seeds of the so-called *Mo-bi* fiber." (*Meyer.*)

18436. SAPINDUS UTILIS. **Soapberry.**

From near Hanchau. (No. 211a.)

18437. RAPHANUS SATIVUS. **Radish.**

From Hanchau, "(No. 212a.) A small variety of red radish with round, elongated form. Seeds were obtained through Mr. F. D. Cloud, acting consul at Hanchau." (*Meyer.*)

18438. ASTRAGALUS sp.

From Shanghai. (No. 213a.)

18439. CITRUS MEDICA. **Lemon.**

From Hanchau. "(No. 214a.) A large Chinese lemon, or possibly wild pomelo. A citrus fruit which serves the purpose here of our lemon. The fruit is very large, 4 inches long by 2½ to 3 inches wide; has loose skin which is full of a particularly pungent oil. The trees come true to seed and grow tall; branches are rather bare and full of large spines; can stand severe frosts and heavy snowfalls and may be of use as a stock plant for the northern limit of our citrus belt." (*Meyer.*)

18440. CITRUS DECUMANA. **Pomelo.**

From Shanghai. "(No. 215a.) Seeds of a large, loose-skinned, loosely segmented pomelo, which is eaten here like the orange and is not bitter at all. A fruit well worth introducing." (*Meyer.*)

18441. BRASSICA sp.

From Tang-hse near Hanchau, Che-kiang Province. "(No. 216a.) The plant producing these seeds, out of which a good edible oil is made, is only grown as a winter crop on rice fields, and the crop is ripe before the rice needs the space. The young tops of the plant are eaten boiled as a vegetable." (*Meyer.*)

18442. BRASSICA spp.

From Shanghai. (No. 217a.) Apparently a mixture of at least two varieties of Brassica.

18443. PANICUM MILIACEUM. **Broom-corn millet.**

From Shanghai. (No. 218a.)

18444. PHASEOLUS CALCARATUS. **Bean.**

From Shanghai. "(No. 236a.) A small, reddish bean used as food. Chinese name *Mu tsa.*" (*Meyer.*)

18445. PERILLA OCYMOIDES. **Perilla.**

From Shanghai. (No. 237a.)

18446. NELUMBO NUCIFERA ALBA. **White lotus.**

From Shanghai. "(No. 238a.) The seeds are highly esteemed by the Chinese as delicatessen. They boil them and roll them in powdered sugar, and they taste fine. Our confectioners might try to make the public acquainted with them." (*Meyer.*)

18447. NELUMBO NUCIFERA ROSEA. **Red lotus.**

From Shanghai. "(No. 239a.) Much cheaper than the white variety; otherwise the same description applies to it." (*Meyer.*)

18448. DOLICHOS LABLAB. **Hyacinth bean.**

From Shanghai. (No. 244a.)

18429 to 18458—Continued.

18449. RAPHANUS SATIVUS. **Radish.**

From Shanghai. "(No. 245a.) Seed of a white variety." (*Meyer.*)

18450. ABUTILON AVICENNAE. **China jute.**

From Shanghai. "(No. 246a.) Seed of a fiber-producing plant called *pa-mu.*" (*Meyer.*)

18451. CANNABIS SATIVA. **Hemp.**

From Shanghai. (No. 247a.)

18452. BRASSICA sp.

From Shanghai. (No. 248a.)

18453. CORCHORUS sp.

From Shanghai. "(No. 249a.) Seed of a fiber-producing plant called '*Ching-mu-tse.*' The fiber is used in weaving rush mats." (*Meyer.*)

18454. HORDEUM VULGARE. **Barley.**

From Shanghai. (No. 250a.)

18455. PISUM SATIVUM. **Pea.**

From Shanghai. (No. 251a.)

18456. (Undetermined.)

From Shanghai. (No. 252a.) A mixture of vetches and peas.

18457. TRITICUM VULGARE. **Wheat.**

From Tan-yang. (No. 253a.)

18458. HORDEUM VULGARE NUDUM. **Barley.**

From Tan-yang. "(No. 254a.) Seed of a hull-less barley obtained at Tan-yang near Chinkiang, south of the Yangtze River." (*Meyer.*)

18459 and 18460. GLYCINE HISPIDA. **Soy bean.**

From West Branch, Mich. Received through Mr. Edward E. Evans, May 2, 1906.

18459. *Green.* **18460.** *Early black.*

18461. TRIFOLIUM sp. **Clover.**

From Pretoria, Transvaal. Presented by Prof. J. Burtt Davy, agrostologist and botanist of the Transvaal Department of Agriculture. Received April 30, 1906.

"*Limoru* clover seed from British East Africa, where it grows at an altitude of about 6,000 to 7,000 feet; it also appears to grow well when planted in a dry country." (*Davy.*)

18462. CUCUMIS MELO. **Muskmelon.**

From Cartagena, Colombia. Presented by Mr. Wm. R. Maxon, of San Jose, Costa Rica. Received April 28, 1906.

Seed of the native Cartagena muskmelon.

18463. ANDROPOGON CYMBARIUS.

From Central Madagascar. Presented by M. Derlandlee, of the Madagascar Department of Agriculture, Tananarivo. Received April 27, 1906.

"A good forage plant when young, and the best known of the central Madagascar species. Known by the natives as *Verotsanjy.*" (*Derlandlee.*)

18464 to 18467. ASPARAGUS spp. **Asparagus.**

From Palermo, Sicily. Presented by Prof. Dr. A. Borzi, of the Royal Botanical Gardens. Received May 2, 1906.

Asparagus roots and seeds, as follows:

18464. ASPARAGUS ACUTIFOLIUS.

(Roots.)

18465. ASPARAGUS ACUTIFOLIUS.

(Seeds.)

18466. ASPARAGUS MEDEOLOIDES.

(Seeds.)

18467. ASPARAGUS MEDEOLOIDES.

(Roots.)

18468. CITRUS TOROSA.

From Manila, P. I. Presented by Mr. William S. Lyon, horticulturist, Bureau of Agriculture. Received May 2, 1906.

18469. LEVISTICUM OFFICINALE. **Lovage.**

From Holland, Mich. Received through Mr. William Kremers, May 3, 1906.

Plants advertised by the Greening Nursery Company, of Monroe, Mich., as the "Silver King Hardy Celery." Obtained for determination.

18470. MEDICAGO MEDIA. **Sand lucern.**

From Milwaukee, Wis. Received through the Wernich Seed Company, May 3, 1906.

18471. HUMULUS LUPULUS. **Hop.**

From Stevens Point, Wis. Received through Mr. A. N. Mueller, April 28, 1906.

Bohemian.

18472 and 18473. VIGNA UNGUICULATA. **Cowpea.**

From Augusta, Ga. Received through the N. L. Willet Seed Company, May 4, 1906.

18472. *Black-eye.*

18473. *Unknown.*

18474. HARPEPHYLLUM CAFFRUM. **Kafir plum.**

From Cape Town, South Africa. Presented by Mr. C. P. Lounsbury, of the Department of Agriculture. Received May 10, 1906.

Seed collected in the Eastern Province of Cape Colony. (For description see No. 9616.)

18475. ABROMA AUGUSTA. **Anabó.**

From Manila, P. I. Presented by Mr. W. S. Lyon, horticulturist, Bureau of Agriculture. Received May 11, 1906.

"A perennial shrub producing the Anabó bast fiber." (*Lyon.*)

18476. SAPINDUS UTILIS. **Soapberry.**

From Algiers, Algeria. Received through Mr. James Johnston, United States consul, April 30, 1906.

"A native of South China, cultivated in Algeria, where it comes into bearing in eight or ten years. The tree prefers dry, rocky soil, and has been known to yield \$10 to \$20 worth of berries every year. These contain 38 per cent saponin, an alkaline principle which makes them useful for cleaning purposes. In eastern countries the fruit was much used before the introduction of soap and is still preferred for washing the hair and cleansing delicate fabrics like silk." (*Barclay.*)

18477. Panicum miliaceum. **Broom-corn millet.**

From New York, N. Y. Received through J. M. Thorburn & Co., May 2, 1906.

White French.

18478. Asparagus scaber.

From Frescati, near Stockholm, Sweden. Presented by Prof. Veit Wittrock. Received May 1, 1906.

Seeds obtained for hybridizing work conducted by Mr. G. W. Oliver, of this Department.

18479. Garcinia mangostana. **Mangosteen.**

From Buitenzorg, Java. Presented by Doctor Treub, director of the Botanical Gardens. Received May 5, 1906.

18480 to 18498.

From Fürstenalps, near Khur, Switzerland. Presented by Dr. F. G. Stebler, director of the Seed Control Station, Zurich. Received May 4, 1906.

A collection of hardy grass and forage plant seeds raised in Doctor Stebler's alpine garden in the Fürstenalps, near Khur, at an altitude of 5,700 feet. "These are all hardy strains which have been raised for some years in this garden and thoroughly acclimated to a short, cold growing season. That these forms are extremely hardy has been frequently proved by planting commercial seed of the same kind in these gardens, where it is invariably killed out for the most part during the first season." (*Stebler.*)

18480. Poterium dodecandrum.
18481. Festuca violacea.
18482. Poa alpina.
18483. Festuca halleri.
18484. Alopecurus pratensis.
18485. Arrhenatherum elatius.
18486. Phleum michelii.
18487. Festuca pratensis.
18488. Poterium officinale.
18489. Ligusticum mutellina.
18490. Festuca pumila.
18491. Bromus inermis.
18492. Dactylis glomerata.
18493. Oxytropis campestris.
18494. Phaca frigida.
18495. Oxytropis campestris.
18496. Hedysarum obscurum.
18497. Trifolium caespitosum.
18498. Trifolium alpinum.

18499. Pinus edulis. **Nut pine.**

From New Mexico. Received through Mr. H. B. Beck, Austin, Tex., May 1, 1906.

For exchange.

18500. Cereus sp.

From Brownsville, Tex. Received through Mr. O. W. Barrett, May 4, 1906.

18501 to 18504. Andropogon sorghum. **Sorghum.**

From Curaçao, Dutch West Indies. Presented by Mr. I. Wesleyn, Superintendent of Agriculture. Received May 8, 1906.

18501. *Doerah.*
18502. *Kabees largoe.*
18503. *Santa Martha.*
18504. Common type.

18505. CHAETOCHLOA ITALICA. **Korean millet.**

From Yokohama, Japan. Received through the Yokohama Nursery Company, May 7, 1906.

Paytupsal.

18506. TRIGONELLA FOENUM-GRAECUM. **Fenugreek.**

From Kohat, Northwest Frontier Province, India. Received through Mr. Frank Benton (No. 70), April 30, 1906.

18507. CUCUMIS MELO. **Muskmelon.**

From Lahore, India. Received through Mr. Frank Benton, April 30, 1906.

"(No. 76.) Seed from a freshly cut melon purchased in the market at Lahore, India, in March, 1906. Melon small, round; yellow, with green marking; netted. Had a strong but rather fragrant odor, which is difficult to indicate, but reminded one of musk." (*Benton.*)

18508. ACACIA FARNESIANA. **Popinac.**

From Kohat, Northwest Province, India. Rceeived through Mr. Frank Benton (No. 73), April 30, 1906.

(See No. 3349, Inventory No. 7, and No. 3528, Inventory No. 8.)

18509. ALBIZZIA LEBBEK. **Siris tree.**

From Dera Ismail, Northwest Province, India. Received through Mr. Frank Benton (No. 74), April 30, 1906.

18510 and 18511. TRIFOLIUM PRATENSE. **Red clover.**

From Riga, Russia. Received through Mr. Heinrich Goegginger, May 9, 1906.

18510. *Ufa.*

18511. *Jeletz.*

18512 to 18517. ELEUSINE CORACANA. **Ragi.**

From Bangalore, South India. Presented by F. Fletcher, esq., Deputy Director of Agriculture, Bombay Presidency. Received April 27, 1906.

A collection of ragi:

18512. *Konanakombina.*

18513. *Janumuddina.*

18514. *Balepatte.*

18515. *Gidda.*

18516. *Sannakari.*

18517. *Gundutanekari.*

18518. ANDROPOGON SORGHUM. **Sorghum.**

From Manchuria. Received through the Yokohama Nursery Company, May 9, 1906.

"*Kaulien* sorghum of Manchuria, which forms the staple produce of that country and which has been made famous in the last year. It grows 8 to 10 feet high; the stalks and grain were indispensable for all concerned." (*Yokohama Nursery Company.*)

18519 to 18522. VIGNA UNGUICULATA. **Cowpea.**

From Richmond, Va. Received through T. W. Wood & Sons, May 9, 1906.

18519. *Clay.*

18520. *Red Ripper.*

18521. *Whippoorwill.*

18522. *New Era.*

18523 and 18524. ARACHIS HYPOGAEA. **Peanut.**

From Chepauk, Madras Presidency, South India. Presented by Mr. C. A. Barber, government botanist. Received May 9, 1906.

18523. *Country* groundnut. (C. A. B. No. 3153.)

18524. *Local Mauritius* groundnut. (C. A. B. No. 3154.)

18525 to 18529. MUSA SAPIENTUM. **Banana.**

From Manila, P. I. Presented by Mr. W. S. Lyon, horticulturist, Bureau of Agriculture. Received May 11, 1906.

18525. *Saba.*

18526. *Butuhan.*

18527. *Lacatan.*

18528. *Matabia.*

18529. *Latundan.*

18530. RAPHIDOPHORA MERRILLII.

From Manila, P. I. Presented by Mr. W. S. Lyon, horticulturist, Bureau of Agriculture. Received May 11, 1906.

18531 to 18534. ZEA MAYS. **Corn.**

From Juarez, Chihuahua, Mexico. Presented by Mr. Elmer Stearns. Received May 10, 1906.

Four varieties of dent corn.

18531. *Maiz blanco* (white corn).

18532. *Jaraleno.*

18533. *Temporal.*

18534. *El Coahuileno.*

18535. ACTINIDIA CHINENSIS. **Yang taw.**

From Kuling, Kiukiang, Kiang-si, China. Presented by Rev. Hugh W. White. Received May 15, 1905. (See S. P. I. No. 11629, Inventory No. 11.)

"The plant grows wild here, and is not known in the United States; indeed, I have seen it nowhere else in China. We find it a delicious fruit with excellent medicinal effect on the digestion. The place is about the latitude of Galveston, but it is on a mountain 3,500 feet high and has a climate not unlike Virginia or North Carolina. In winter there is an abundance of snow and ice. The subsoil is a poor, stony, red soil, but is covered with a few inches of black wood earth. There is much rainfall. The plant grows like a grape, and the fruit is single, between the size of a hickory nut and a walnut, with a russet-looking green skin and a consistency much like the green fig. If it can be cultivated it will make a valuable fruit." (*White.*)

18536 and 18537. CHENOPODIUM QUINOA. **Quinoa.**

From La Paz, Bolivia. Presented by Mr. Arthur L. Jackson, of the Andes Trading Company. Received May 19, 1906.

18536.

Canana. A dark-seeded variety of poor quality.

18537.

Common. A white-seeded variety most commonly grown.

"I find that there are three kinds of quinoa commonly grown here, though one is rather rare and hard to get. I am sending you samples of two varieties in this mail. The third variety is the *Quinoa Real* (or *Royal Quinoa*), which is a much taller plant. Quinoa here is principally used by the Indians. They make various kinds of foods and a drink out of it. The latter is called *Chicha* and when fermented is quite intoxicating. *Chicha* is also made out of other ingredients, such as peanuts. Quinoa is also much used as rice is used in soups, and the Indians make a dish out of it which looks like a sort of watery mush or hominy, which is not bad to eat. They also grind it up on a stone and make a kind of Indian bread, like coarse Gra-

18536 and 18537—Continued.

half bread, which is good and much more nutritious, or so they claim, than corn or meal bread. I have been told that quinoa does not grow well at a less altitude than about 8,000 feet." (*Jackson.*)

18538. LILIUM LONGIFLORUM EXIMIUM. **Easter lily.**

From Washington, D. C. Numbered May 23, 1906.

Plants grown from seed propagated in the Department greenhouse.

18539. CARISSA ARDUINA. **Amatungulu.**

From Cape Town, South Africa. Presented by the Corporation of the City of Cape Town Public Gardens. Received May 21, 1906.

(See No. 9612, Inventory No. 10; and Nos. 13239 and 13967, Inventory No. 11.)

18540 to 18542. HORDEUM spp. **Barley.**

From Svalöf, Sweden. Received through Dr. N. H. Nilsson, of the Swedish Seed Breeding Institute, May 24, 1906.

Pedigreed brewing barleys produced by selection and each variety said to be 100 per cent pure seed. (See Nos. 10583, 10585, and 10586, Inventory No. 11, for description.)

18540. HORDEUM DISTICHUM NUTANS.

Hannchen.

18541. HORDEUM DISTICHUM ERECTUM.

Primus.

18542. HORDEUM DISTICHUM NUTANS.

Prinsess.

18543 to 18545. SOLANUM MELONGENA. **Eggplant.**

From Cairo, Egypt. Presented by Mr. George P. Foaden, of the Khedivial Agricultural Society. Received May 26, 1906.

18543. A BLACK-FRUITED VARIETY.

18544. A WHITE-FRUITED VARIETY.

18545. A ROUND, VIOLET-FRUITED VARIETY.

18546 to 18548.

From Toledo, Ohio. Received through S. W. Flower & Co., May 26, 1906.

18546. TRIFOLIUM PRATENSE. **Red clover.**

Mammoth.

18547. TRIFOLIUM HYBRIDUM. **Alsike.**

18548. PHLEUM PRATENSE. **Timothy.**

18549. ACACIA sp. **Acacia.**

From Jammu, Kashmir. Received through Mr. Frank Benton, May 29, 1906.

"An *Acacia* which grows wild on very poor, dry, and stony soil in southern Kashmir. It is used as a hedge plant. Single specimens standing alone sometimes attain a diameter of 2 feet at base of trunk and 30 to 40 feet in height. Covered in April with a profusion of ornamental white, tassel-like blossoms, which are quite freely visited by bees and yield a fine quality of honey." (*Benton.*)

18550. CITRUS AUSTRALASICA. **Finger lime.**

From Wellington Point, near Brisbane, Queensland, Australia. Presented by Mr. James Pink. Received May 29, 1906.

(See No. 14993, Inventory No. 11.)

18551 to 18556. TRIFOLIUM PRATENSE. **Red clover.**

From Oakland, Nebr. Grown on the ranch of Mr. John P. Young from seed planted in 1905 and resown at same place in the spring of 1906.

A collection of red clover seed used in the plant life history experiments being conducted by Mr. C. J. Brand, of this Department.

18551. Missouri seed. (No. 6.)

18552. Commercial seed. (No. 9.)

18553. Nebraska seed. (No. 11.)

18554. Courland (Russia) seed. (No. 18.)

18555. Wisconsin seed. (No. 19.)

18556. Pennsylvania seed. (No. 21.)

18557 to 18560. ELEUSINE CORACANA. **Ragi.**

From Bangalore, South India. Presented by Mr. F. Fletcher, Deputy Director of Agriculture, Bombay Presidency. Received May 31, 1906.

18557. *Dodda.*

18558. *Madayangiri.*

18559. *Majjige.*

18560. *Hasarukambi.*

18561 to 18626.

From China. Received through Mr. F. N. Meyer, at the Plant Introduction Garden, Chico, Cal., May 18, 1906.

Seeds and cuttings of Chinese plants, the seeds being indicated by the letter "a" following the numbers, as follows:

18561. MORUS ALBA. **Mulberry.**

From Tang-hsi. (No. 140.)

18562. MORUS ALBA. **Mulberry.**

From Shanghai. (No. 514.)

18563. MORUS ALBA. **Mulberry.**

From Tang-hsi. (No. 520.)

18564. PITTOSPORUM TOBIRA.

From Shanghai. (No. 200a.)

18565. ZIZYPHUS SATIVA. **Jujube.**

From Peking. (No. 201a.)

18566. EUONYMUS JAPONICUS.

From Hankow. (No. 141.)

18567. EUONYMUS sp.

From Tang-hsi. (No. 142.)

18568. ELAEAGNUS sp.

From Hankow. (No. 143.)

18569. ALTINGIA CHINENSIS.

From Hankow. (No. 145.)

18570. SMILAX sp.

From Tang-hsi. (No. 146.)

18571. (Undetermined.)

From Tang-hsi. (No. 147.)

18572. DAPHNE sp.

(No. 148.)

18573. CHIMONANTHUS FRAGRANS.

From Hankow. (No. 503.)

18574. HIBISCUS SYRIACUS. **Rose of Sharon.**

From Hankow. (No. 505.) Cuttings.

18575. HIBISCUS SYRIACUS. **Rose of Sharon.**

From Hankow. (No. 192a.) Seeds.

18561 to 18626—Continued.

18576. ROSA RUGOSA. **Rose.**

From Shanghai. (No. 506.)

18577. JUNIPERUS CHINENSIS. **Chinese juniper.**

From Shan-hai-kwan. (No. 166a.)

18578. ACER MONO. **Maple.**

From Wei-tsan Mountains, near Peking. (No. 169a.) Seeds sent under No. 67a, S. P. I. No. 17898.

18579. GLEDITSIA sp.

From Wei-tsan Mountains, near Peking. (No. 174a.)

18580. HIBISCUS MANIHOT.

From Peking. "(No. 180a.) A perennial *Althaea* or a *Hibiscus* with very large, bright yellow flowers. Brought from southern China to Peking by Dr. N. S. Hopkins, from whose son I obtained the seeds." (*Meyer.*)

18581. LYCIUM sp. **Matrimony vine.**

From Palitswang. "(No. 182a.) A matrimony vine which is trained on one stem, with small branches drooping down like a weeping tree. Cuttings sent under No. 86, S. P. I. No. 18271." (*Meyer.*)

18582. RHAMNUS sp.

From Tchang-ping-tcho. (No. 184a.)

18583. VIBURNUM ODORATISSIMUM.

From Shanghai. (No. 191a.)

18584. ACTINIDIA CHINENSIS. **Yangtaw.**

From Hankow. "(No. 194a.) Obtained from Mr. F. J. Brown, of Hankow, who received the seeds from Ichang. Mr. Brown says it is a vine bearing nice edible fruits, something like large gooseberries, with rough skin." (*Meyer.*)

18585. PRUNUS sp. **Plum.**

From Tang-hsi. (No. 144.)

18586. PRUNUS sp. **Plum.**

From Shanghai. (No. 509.)

18587. PRUNUS sp. **Cherry.**

From Tang-hsi. (No. 519.)

18588. AMYGDALUS PERSICA. **Peach.**

From Shanghai. (No. 501.)

18589. AMYGDALUS PERSICA. **Peach.**

From Shanghai. (No. 502.)

18590. AMYGDALUS PERSICA. **Peach.**

From Shanghai. (No. 508.)

18591. AMYGDALUS PERSICA. **Peach.**

From Shanghai. (No. 510.)

18592. AMYGDALUS PERSICA. **Peach.**

From Shanghai. (No. 511.)

18593. AMYGDALUS PERSICA. **Peach.**

From Shanghai. (No. 512.)

18594. AMYGDALUS PERSICA. **Peach.**

From Shanghai. (No. 513.)

18561 to 18626—Continued.

18595. AMYGDALUS DAVIDIANA (?).

From Tientsin. (No. 168a.)

18596. DIOSPYROS KAKI. **Persimmon.**

From Shanghai. "(Nos. 504 and 516.) Said to be a seedless persimmon of medium size." (*Meyer.*)

18597. DIOSPYROS KAKI. **Persimmon.**

From Tang-hsi. "(No. 517.) Said to be a large, seedless persimmon of very sweet taste." (*Meyer.*)

18598. DIOSPYROS sp. **Persimmon.**

From Tang-hsi. "(No. 518.) A persimmon growing wild in different places and used as a stock for the larger seedless ones. Is an entirely different species from the one used in northern China; has a smooth, white bark." (*Meyer.*)

18599. DIOSPYROS sp. **Persimmon.**

From Chang-li. "(No. 161a.) Seed of the wild persimmon used as stock for the large seedless varieties, and the fruits, too, are used in a semidried state, being a poor people's fruit." (*Meyer.*)

18600. MALUS MALUS. **Apple.**

From Shanghai. (No. 507.)

18601. CYDONIA JAPONICA. **Japanese quince.**

From Peking. (No. 173a.)

18602. VITIS sp. **Grape.**

From Hankow. "(No. 515.) A purple grape, bearing medium-sized bunches; said to have been introduced by the station missionaries. If so, it might be a fine grape for the South Atlantic States, as the climate in Hankow is very similar to that of the Southern States. (*Meyer.*)

18603. JUGLANS REGIA. **Persian walnut.**

From Chang-li. "(No. 162a.) A very large, paper-shell walnut, the largest one to be had. Owner was not willing to show the tree, so could not obtain scions. (*Meyer.*)

18604. JUGLANS REGIA. **Persian walnut.**

From Chang-li. "(No. 163a.) A sample of large, well-formed nuts, of which scions were sent under No. 48, S. P. I. No. 17747." (*Meyer.*)

18605. PISTACIA CHINENSIS. **Pistache.**

From Wei-tsan Mountains near Peking. (No. 170a.) The same as No. 63a, S. P. I. No. 19391.

18606. BRASSICA PE-TSAI. **Pe-tsai cabbage.**

From Hankow. (No. 193a.)

18607. SESAMUM INDICUM. **Sesame.**

From Shanghai. (No. 189a.) *Black.*

18608. MEDICAGO sp.

From Peking. (No. 183a.)

18609. (Undetermined.)

From Shan-hai-kwan. (No. 181a.)

18610. ANDROPOGON SORGHUM. **Sorghum.**

From Shan-hai-kwan. "(No. 153a) A white-grained variety of sorghum grown on rather alkaline land." (*Meyer.*)

18561 to 18626—Continued.

18611. ANDROPOGON SORGHUM. **Sorghum.**

From Shan-hai-kwan. "(No. 154a.) A light brown colored variety of sorghum grown on rather alkaline land." (*Meyer.*)

18612. ANDROPOGON SORGHUM. **Sorghum.**

From Shan-hai-kwan. "(No. 155a.) A dark brown colored variety of sorghum grown on rather alkaline land." (*Meyer.*)

18613. ANDROPOGON SORGHUM. **Sorghum.**

From Peking. "(No. 172a.) White seeded. Given to me by Mr. J. T. Headlands, of the Methodist Mission, Peking. This is the drooping variety used to make brooms from." (*Meyer.*)

18614. ANDROPOGON SORGHUM. **Sorghum.**

From Peking. (No. 172a.) Brown seeded. (For description see No. 18613.)

18615. ORYZA SATIVA. **Rice.**

From Shan-hai-kwan. "(No. 156a.) An upland rice grown sparsely around here; seems to succeed on rather alkaline land. Should be hardy as far as New York or in Illinois. Probably the same as No. 40a (S. P. I. No. 17915), but is from a different locality." (*Meyer.*)

18616. ORYZA SATIVA. **Rice.**

From Chang-li. "(No. 157a.) An upland rice growing on rather moist land." (*Meyer.*)

18617. VIGNA UNGUICULATA. **Cowpea.**

From Shan-hai-kwan. "(No. 158a.) A brown and white spotted bean." (*Meyer.*)

18618. PHASEOLUS ANGULARIS. **Adzuki bean.**

From Shanghai. (No. 187a.)

18619. GLYCINE HISPIDA. **Soy bean.**

From Shanghai. "(No. 188a.) A very large variety of yellow soy bean." (*Meyer.*)

18620. PANICUM MILIACEUM. **Broom-corn millet.**

From Shan-hai-kwan. (No. 159a.)

18621. CHAETOCHLOA ITALICA. **Millet.**

From Shan-hai-kwan. (No. 160a.)

18622. CHAETOCHLOA ITALICA. **Millet.**

From Shan-hai-kwan. (No. 165a.)

18623. GOSSYPIUM sp. **Cotton.**

From Chang-li. (No. 164a.)

18624. SAPIUM SEBIFERUM. **Tallow tree.**

From Shanghai. (No. 190a.)

18625. ANDROPOGON SORGHUM. **Sorghum.**

From Kung-ki-tschang. (No. 171a.) Red seeded.

18626. ANDROPOGON SORGHUM. **Sorghum**

From Kung-ki-tschang. (No. 171a.) White seeded.

18627 and 18628. MEDICAGO SATIVA. **Alfalfa.**

From Bassorah, Arabia. Received from Mr. Herbert W. Poulter, through Mr. David Fairchild, June 12, 1906.

Arabian alfalfa or *Jet.*

18627. Seed from irrigated plants.

18628. Seed from unirrigated plants.

18629. MEDICAGO SATIVA. **Alfalfa.**

From Buffalo, N. Y. Received through the Harvey Seed Company, June 13, 1906.

Canadian grown alfalfa.

18630. PHOENIX DACTYLIFERA. **Date.**

From Morocco. Received through McCaig, Gilchrist & Co., Glasgow, Scotland, May 28, 1906.

Tafilalt. "Groves of this date occur in the oases of the region of Tafilalt, and this is supposed to be the largest variety grown there. It is in any case that variety which is most largely exported from Morocco, especially to the English market." (*Fairchild.*)

18631. IPOMOEA BATATAS. **Sweet potato.**

From Paoli, Ind. Presented by Braxtan Brothers. Received June 1, 1906.

This variety is of a peculiar and unusual shape, resembling a muskmelon. "Raised from a sweet potato plant and bought by us in a lot of sweet potatoes last December and kept since lying around the store with no care whatever as to its preservation, while our sweet potatoes rotted right along." (*Braxtan.*)

18632. CANNABIS SATIVA. **Hemp.**

From Shinmintong District, Manchuria. Received through the Yokohama Nursery Company, Yokohama, Japan, May 29, 1906.

"Manchurian hemp seeds produced in the district of Shinmintong, some 200 miles southwest of Kirin Province." (*Yokohama Nursery Company.*)

18633. ANDROPOGON SORGHUM. **Sorghum.**

From Turks Island, West Indies. Presented by Mr. J. A. Howells, United States consul. Received June 4, 1906.

"*Guinea corn*, the principal crop on this island for grain and fodder." (*Howells.*)

18634. XANTHOSOMA sp. **Yautia.**

From Chiapas, southern Mexico. Presented by Mr. Lawrence Harmon, of Chicago, Ill. Received April 26, 1906. Additional roots were received June 14, 1906.

Roots of a semiwild yautia found growing wild in Chiapas; said to be eaten by the natives, but not cultivated by them.

"These were shipped from the city of San Juan Bautista, Tabasco, Mexico, and it is supposed that they were brought into that city by the peons, who gathered them in that immediate vicinity. It is further understood that there is no systematic attempt made to cultivate them, and that they practically grow wild under varying circumstances, which might in some measure account for variations found in them." (*Harmon.*)

18635. PISTACIA CABULICA (?).

From Chaman, British India. Presented by Lieut. W. L. Maxwell, One Hundred and Twenty-Seventh Baluchistan Light Infantry. Received June 4, 1906.

"These wild nuts are much eaten by the Pathans around here. With regard to planting them, the following information may be useful: The Pathans say that a new tree only grows where one of the hill partridges eats a nut and passes it through in its excreta on to suitable ground. I asked the forest officer in Quetta if there could be any truth in this extraordinary statement. He told me that he had several trees growing in the Quetta plantations, and that all had been grown from seed so treated. The reason presumably is that the oil, in which these nuts are very rich, must first be extracted from the seeds. I heard from a cultivator here that if the seeds were well rubbed between the hands until all the oil was extracted, satisfactory results were obtained from planting them. The seeds ripen in August." (*Maxwell.*)

18636. PISTACIA VERA. **Pistache.**

From Viernyi, Semiryetchensk Province, Turkestan. Presented by Mr. E. Valneff, through Mr. E. A. Bessey, of the Subtropical Labratory, Miami, Fla. Received June 4, 1906.

"Pistache seeds from north Persia, the best that we know." (*Valneff.*)

18637. PISTACIA INTEGERRIMA. **Zebra wood.**

From Khost, India. Presented by Mr. Philip Parker, of the Indian Irrigation Service, through Mr. J. S. Davis, executive engineer, Bannu, Kuram Valley Irrigation Project. Received June 4, 1906.

"This is the famous zebra wood of Kakra, India, which grows to be a large tree 40 feet or more high, with a trunk in diameter from 2½ to 3 feet, or even as much as 4½ feet. It grows on the warm slopes of the Himalaya Mountains in northern India, usually at an altitude of from 1,200 to 8,000 feet. The wood is very hard and close grained, brown in color, and beautifully mottled with yellow and dark veins, whence the name 'zebra wood.'

"Stewart and Brandis, in their 'Forest Flora of Northwest and Central India,' say: 'The heartwood of mature trees is the best and most handsome wood of the northwest Himalaya for carving, furniture, and all kinds of ornamental work.'

"According to Mr. Bolton, settlement officer at Dehra Ishmail Kahn, this species is difficult to cultivate, 'as it is necessary for the seed to pass through the intestines of a bird before it can germinate.'

"Mr. Parker writes as follows: 'I gave one seed to a bird (fowl) that was to be killed the next day and told my cook to give me the seed when drawing the bird. I have just noticed that the seed, after being put in water, has begun to germinate, so evidently the Indian fowl is good enough.'

"This species is very little known, but it is of some promise as an ornamental and even perhaps as a timber tree in some parts of the southwest." (*Swingle.*)

18638. AGAVE RIGIDA SISALANA. **Sisal.**

From Paramaribo, Surinam. Presented by Dr. C. J. J. Van Hall, Director of Agriculture for the Dutch West Indies. Received at the Porto Rico Agricultural Experiment Station, Mayaguez, P. R., in May, 1906.

"Parent plants are believed to be direct descendants of plants in the Trinidad Botanical Gardens which were brought from Yucatan, Mexico." (*Barrett.*)

18639 and 18640. ONOBRYCHIS ONOBRYCHIS. **Sainfoin.**

From Paris, France. Received through Vilmorin-Andrieux & Co., June 4, 1904.

18639. Double. **18640.** Common.

18641 to 18651. CYAMOPSIS TETRAGONOLOBA. **Guar.**

From Surat, India. Presented by Mr. F. Fletcher, Deputy Director of Agriculture, Bombay Presidency. Received June 4, 1906.

Nadiad varieties:

18641.

Sotia. The seed of this variety is principally used as cattle food. It is also sown in beds of ginger, turmeric, etc., to serve as shade plants to young shoots.

18642.

Wakardia. The pods of this variety are used as a green vegetable.

18643.

Telia. This is also sown for vegetable purposes, but it is considered superior to *Wakardia* on account of its being more smooth.

18644.

Pardeshi. Used as a vegetable.

Surat varieties:

18645.

Talabda. Seed used as cattle food.

18646.

Sotia. Chiefly used as a vegetable; but in the case of valuable garden crops, such as ginger, turmeric, suran, etc., it serves a double purpose, viz, as a shade plant and as green manure.

18647.

Makhania. Used only as a vegetable.

Dhulia varieties:

18648.

Botkya. A short-podded variety used as a vegetable.

18649.

Telia. A long-podded variety used as a vegetable; cooks better than the *Botkya.*

Dharwar varieties:

18650.

Turai chavali. Used as a vegetable.

18651.

Chole chavali. Used as a vegetable.

18652 to 18661. DIOSCOREA spp. **Yam.**

From Mayaguez, P. R. Received at the Subtropical Laboratory and Garden, Miami, Fla., in May, 1906.

A collection of yams, as follows:

18652. DIOSCOREA TRIFIDA.

Negro or *Yampee* (ex Jamaica).

18653. DIOSCOREA TRIFIDA.

Mapuey Blanco. White roots.

18654. DIOSCOREA TRIFIDA.

Mapuey Colorado. Purple roots.

18655. DIOSCOREA PENTAPHYLLA (?).

(Ex Hawaii.)

18652 to 18661—Continued.

18656. Dioscorea bulbifera.

Gunda. Large irregular-shaped axillary bulbils.

18657. Dioscorea alata (?).

Barbados Table (ex Jamaica).

18658. Dioscorea alata (?).

White Lisbon (ex Jamaica).

18659. Dioscorea aculeata.

Lucia (ex Jamaica).

18660. Dioscorea aculeata.

Guinea. Best yam in Porto Rico from cultural standpoint.

18661. Dioscorea aculeata (?).

Congo. Yellow root.

18662. Asparagus sp.

From Peking, China. Received through Mr. F. N. Meyer, June 4, 1906.

"Berry taken from a plant growing in the Temple of Heaven grounds in Peking, September 2, 1905." (*Meyer.*)

18663 and 18664.

From Darmstadt, Germany. Received through Mr. Conrad Appel, June 4, 1906.

18663. Poa trivialis. **Rough-stalked meadow grass.**

18664. Medicago sativa. **Alfalfa.**

Provence.

18665. Pinus insularis. **Benguet pine.**

From Manila, P. I. Presented by Capt. George P. Ahern, Director of Forestry. Received June 4, 1906.

Seed obtained from Benguet Province.

18666. Hordeum distichum nutans. **Barley.**

From Brünn, Austria. Presented by Prof. J. Vanha. Received in March, 1906.

Hanna.

18667 to 18673.

From Cape Town, South Africa. Presented by the director of the Cape Town Public Gardens. Received June 2, 1906.

18667. Aberia caffra. **Kei-apple.**

18668. Asparagus crispus.

18669. Asparagus sarmentosus.

18670. Asparagus sprengeri.

18671. Carissa arduina. **Amatungulu.**

18672. Diosma crenata. **Buchu.**

18673. Opuntia sp. **Prickly pear.**

18674. Vicia sativa. **Common vetch.**

From Portland, Oreg. Received through the Portland Seed Company, June 7, 1906.

18675 and 18676. ARACHIS HYPOGAEA. **Peanut.**

From Muanza, German East Africa. Presented by Prof. Dr. A. Zimmermann, Amani. Received June 8, 1906.

18675. A variety with red skin.

18676. A variety with brown skin.

18677. MEDICAGO SATIVA. **Alfalfa.**

From Traverse City, Mich. Received through Mr. J. M. Westgate, June 11, 1906.

Seed gathered from two-year-old plant on the farm of Mr. C. R. Dockeray, Traverse City, Mich., June 1, 1905.

18678. MEDICAGO SATIVA. **Alfalfa.**

From Split Rock, N. Y. Received through Prof. A. S. Hitchcock, June 11, 1906.

Seed gathered October 6, 1904.

18679 and 18680. ZEA MAYS. **Corn.**

From Magyar Óvár, Hungary. Presented by Prof. Kern Hermann, through Mr. Edgar Brown. Received June 2, 1906.

Two varieties of flint corn, as follows:

18679. *Cinquatino.* **18680.** *Sehr früher von Alcinth.*

"These two corns are varieties of the small early flint type which is now being cultivated to a considerable extent in Hungary. They are very small in size, the ears about 6 inches long, with the kernels about the size of our larger popcorns. The grains are nearly free from starch, with a rather large embryo. On account of the small size of the stalks, this corn is planted close together, the rows being about 20 inches apart and the hills from 8 to 10 inches apart in the row. The average yield is from 20 to 25 bushels per acre." (*Brown.*)

18681 to 18683.

From Teheran, Persia. Presented by Mr. John Tyler, United States vice-consul-general. Received June 1 and 11, 1906.

18681. PAPAVER SOMNIFERUM. **Opium poppy.**

18682. NICOTIANA TABACUM. **Tobacco.**

18683. PISTACIA VERA. **Pistache.**

"Persian 'Pista' grown in the district of Damghân, about 200 miles east of Teheran. Nuts from this place have the reputation of being the best, purest, and most qualified to resist attacks of parasites." (*Tyler.*)

18684. ANDROPOGON SORGHUM. **Milo.**

From Memphis, Tex. Received through Mr. J. F. Bradley, June 13, 1906.

Extra Dwarf.

18685 to 18688.

From Honolulu, Hawaii. Presented by Hon. David Haughs, acting director of Forestry. Received June 11, 1906.

18685. BAUHINIA TOMENTOSA. **St. Thomas tree.**

18686. CASUARINA GLAUCA. **Blue ironwood.**

18687. CASUARINA STRICTA. **Australian ironwood.**

18688. SYNCARPIA LAURIFOLIA. **Turpentine tree.**

18689 to 18691. CHENOPODIUM QUINOA. **Quinoa.**

From La Paz, Bolivia. Received through Señor M. V. Ballovian, Ministerio de Colonias y Agricultura, June 14, 1906.

18689. *Common.*

18690. *Royal.*

18691. *Kanagua.*

(See Nos. 18536 and 18537.)

18692. TRIFOLIUM REPENS. **White clover.**

From Lodi, Italy. Received through Prof. Carlo Besana, June 16, 1906. Introduced by Mr. Edgar Brown, of the Bureau of Plant Industry.

Lodino.

18693 to 18698. PHOENIX DACTYLIFERA. **Date.**

From M'Zab, in the Algerian Sahara. Received through Mr. Yahia ben Kassem, June 16, 1906.

According to Mr. Yahia ben Kassem this lot includes the varieties *Tazzizaoute* and *Bent Kbala.* Upon examination of the offshoots, however, Mr. Swingle found a label, written in Arabic, upon each of the plants, which he succeeded in deciphering as *Timjoohert,* which is described in his letter as follows:

Timjoohert. A soft date from the M'Zab region of the Algerian Sahara; fruit of a rich, red-brown color when ripe, 1½ to 1¾ inches long, three-fourths to seven-eighths inch wide; flesh without fiber, very sweet, and of exceedingly good flavor, considered by some to be superior to the *Deglet noor.* It is a sticky date and its sirupy juice exudes from the ripening fruit in such abundance as to drip from the tree. It will require a process of curing to get rid of this sirup, but this variety is of such good quality that it may, nevertheless, prove profitable in commercial culture, especially in regions where the *Deglet noor* can not mature. It may furnish a good second-class date which can be sold in competition with the selected Oriental dates which now reach our markets from Busra and Muscat.

18699 and 18700.

From Darmstadt, Germany. Received through A. Le Coq & Co., June 16, 1906.

18699. MELILOTUS ALBA. **Sweet clover.**

Bokhara.

18700. VICIA VILLOSA. **Hairy vetch.**

18701 to 18703.

From Reading, England. Received through Sutton & Sons, June 15, 1906.

18701. CRAMBE MARITIMA. **Sea kale.**

18702. CYNARA SCOLYMUS. **Artichoke.**

Purple Globe.

18703. CYNARA SCOLYMUS. **Artichoke.**

Selected Large Green.

18704. CHRYSOPHYLLUM sp.

From Piracicaba, Brazil. Presented by Dr. J. W. Hart, director of the Agricultural College. Received June 7, 1906.

18705. PANICUM LAEVIFOLIUM.

From Pretoria, Transvaal. Presented by Prof. J. Burtt Davy, of the Transvaal Department of Agriculture. Received June 18, 1906.

18706. AMYGDALUS DAVIDIANA.

From Peking, China. Received through Mr. F. N. Meyer (No. 167a), May 18, 1906.

Seeds of the wild peach, scions of which were sent under Nos. 126, 127, and 129 (S. P. I. Nos. 17729 to 17731); from the mountains near Fangshan.

18707. GLYCINE HISPIDA. **Soy bean.**

From China. Renumbered for convenience in recording distribution, June 21, 1906.

A dull reddish brown colored variety of soy beans, the actual source of which is in doubt.

18708 to 18725.

From San Jose, Costa Rica. Presented by Mr. E. C. Rost, through Mr. L. C. Corbett, horticulturist of the Bureau of Plant Industry. Received June 20, 1906.

A collection mostly of economic plants, with notes by Mr. E. C. Rost.

18708. (Undetermined.)

An evergreen vine with white, star-shaped flowers.

18709. (Undetermined.) **Palm.**

18710. CARICA PAPAYA. **Papaw.**

18711. IPOMOEA sp. **Morning-glory.**

Seed of a wild variety.

18712. IPOMOEA sp. **Morning-glory.**

Blue Giant.

18713. CANNA sp.

18714. (Undetermined.) **Gavilana.**

A tree with leaves like the American mountain ash; has yellow flowers somewhat resembling the locust. Should do well in the extreme south.

18715. ANONA sp.

18716. COBAEA SCANDENS.

18717. MUCUNA sp.

18718. (Undetermined.)

18719. ARGEMONE MEXICANA. **Mexican poppy.**

18720. (Undetermined.)

Seed, in a flat, round, spiny pod resembling a sea urchin. Grows on a tall tree with yellow flowers.

18721. GOSSYPIUM sp. **Cotton.**

A few seeds of everbearing, large, native tree cotton.

18722. SOLANUM TUBEROSUM. **Potato.**

Pacaya.

18723. SOLANUM TUBEROSUM. **Potato.**

A potato introduced from Peru.

18724. SOLANUM TUBEROSUM. **Potato.**

A yellow-colored potato introduced from Peru.

18725. SOLANUM TUBEROSUM. **Potato.**

A dark wine-colored potato introduced from Peru.

18726. DOLICHOS LUBIA.

From Paris, France. Received through Messrs. Vilmorin-Andrieux & Co., June 22, 1906.

18727 to 18749.

From Bahama Islands, British West Indies. Collected by Mr. P. J. Wester in April, 1906.

A collection of plants, seeds, and cuttings thought to be of value in the subtropical region of Florida, either as economics or ornamentals, the proximity to the Bahamas and nearly similar climatic conditions making it very probable that these introductions will thrive well in the vicinity of Miami, where they have been planted in the Subtropical Laboratory and Garden.

The accompanying notes are by Mr. Wester.

18727. CITRUS DECUMANA. **Pomelo.**

"Mr. Flagler is reported to have said that he ate better pomelos in the Bahamas, from seedling trees, than any that he tasted in Florida. Upon inquiry it was found that some of this fruit had been supplied by R. S. Johnstone, circuit judge, Nassau, New Providence, Bahamas, who, on solicitation, presented me with budwood from two seedling trees, the fruit of which he considered very superior. The fruit is said to be rather small, but very juicy and sweet." (Lab. No. 460.)

18728. CITRUS DECUMANA. **Pomelo.**

"Fruit said to be of superior value. Budwood presented by Judge R. S. Johnstone." (Lab. No. 461.)

18729. PERSEA GRATISSIMA. **Avocado.**

Johnstone. "Budwood secured through Judge R. S. Johnstone, who gave the following description of the fruit: 'Pear-shaped, but rather broad at basal end; skin smooth, thin; flesh yellow, almond-flavored; seed large; famous as the best avocado in the Bahamas. Ripens in August and September.'" (Lab. No. 462.)

18730. PERSEA GRATISSIMA. **Avocado.**

Largo. "Budwood presented by Mr. C. H. Matthews, from a large tree. He described the fruit as follows: 'Egg-shaped; very large, 3½ to 4 pounds in weight; skin green, very thin; flavor very good; seed small; ripens in August and September.'" (Lab. No. 464.)

18731. PERSEA GRATISSIMA. **Avocado.**

Grant. "Buds secured from a tree in Grantown, said by its colored owner to bear extra early fruit of good quality. The young fruits were well advanced in size for the season when the budwood was obtained, which seemed to substantiate the owner's assertion." (Lab. No. 465.)

18732. HIBISCUS ROSA-SINENSIS. **Chinese hibiscus.**

"Budwood secured from plants in the garden of Hotel Colonial, Nassau, New Providence. Flowers distinct from any of the forms seen in Florida; semidouble, very dark red with a purple tinge, making it a distinct acquisition." (Lab. No. 467.)

18733. VANILLA sp.

"Plants collected on Soldiers road, New Providence. This vanilla grows on land of a very rocky character with a scanty layer of soil. The vegetation does not exceed 12 feet, and the average height of a shrub is 8 feet. It was interesting to note that the foliage was very sparse, affording very little shade. The growth of the vanilla was exceedingly stocky and strong. In appearance the plant resembles the *V. eggersii* in Florida, except that the bract-like leaves of the latter are entirely absent in the Bahama species. The nodes on the latter species are also closer than those on the species from Florida." (Lab. No. 470.)

18727 to 18749—Continued.

18734. FICUS BENJAMINA.

"Used as a shade tree on the streets of Nassau, New Providence. Unquestionably one of the most noble and majestic of shade trees, with dark evergreen foliage. Appears to stand the dust and heat of the street better than any tree I have seen. Cuttings presented by M. Clavel, head gardener, Hotel Colonial, Nassau, New Providence." (Lab. No. 473.)

18735. (Undetermined.)

"Native name 'Spanish Thyme.' A plant belonging to the family Scrophulariaceae, with fleshy, succulent leaves used in the Bahamas for flavoring soups. Cuttings secured in Grantown, New Providence." (Lab. No. 474.)

18736. ANONA RETICULATA. **Custard apple.**

"Budwood secured from a tree in Grantown, having very large fruit, 14½ inches in circumference. Fruit heart-shaped, yellow, netted with crimson veins, crimson on one side, making it exceedingly handsome; tree said by owner to be very prolific. Fruit of good quality." (Lab. No. 478.)

18737. ANONA MURICATA. **Soursop.**

"Budwood secured from a prodigiously prolific tree. As fruits were not mature, there was no opportunity to judge of the quality." (Lab. No. 484.)

18738. TAMARINDUS INDICA. **Tamarind.**

"Budwood obtained from Judge R. S. Johnstone, Nassau, New Providence. Pods with the acid so reduced as to make them relished when eaten direct from the tree, which is unusual with this fruit." (Lab. No. 487.)

18739. ALTHAEA ROSEA. **Hollyhock.**

"A striking and conspicuous ornamental in Nassau, where it has become naturalized." (Lab. No. 489.)

18740. BASELLA ALBA. **Malabar nightshade.**

"Native name 'Spinach.' A plant of running and climbing habit of exceedingly vigorous growth. The leaves have a very close resemblance to spinach in form, whose tenderness and succulency they possess, and are used as spinach in the Bahamas. As the plants thrive well even during the summer months, it is thought that they will prove a valuable acquisition to the vegetable garden in south Florida during the summer months. Seed secured in Grantown, New Providence." (Lab. No. 490.)

18741. CATESBAEA SPINOSA.

"Seed obtained from M. Clavel, head gardener, Hotel Colonial. Leaves evergreen, thick and leathery; branches armed with stout spines, making it a valuable hedge plant; flowers attractive, bell shaped, cream colored." (Lab. No. 492.)

18742. ZEA MAYS. **Corn.**

"*Native yellow* corn presented by Mr. W. M. Cunningham, curator, Botanic Station, Nassau, New Providence. This is a variety of corn collected by Mr. Cunningham, together with Nos. 18743 to 18745, on the various islands where these varieties do quite well. South Florida has at present no variety suited to its conditions, and as the climate here and in the Bahamas is very similar, it is not improbable that some of these varieties may prove valuable introductions." (Lab. No. 495.)

18743. ZEA MAYS. **Corn.**

Governor. "Presented by Mr. W. M. Cunningham. Native to the Bahama Islands." (Lab. No. 496.)

18744. ZEA MAYS. **Corn.**

Native white. "Native to the Bahamas. Presented by Mr. W. M. Cunningham." (Lab. No. 497.)

18727 to 18749—Continued.

18745. Zea mays. **Corn.**

Caicos yellow. "Native to the Bahamas. Presented by Mr. W. M. Cunningham." (Lab. No. 425.)

18746. Dolichos lablab. **Hyacinth bean.**

"Native name *Bonavis.* A very vigorous climbing and trailing plant, foliage resembling the cowpea, but far more vigorous. Stems slightly tinged with purple; seeds dark brown with velvety luster. Seed secured from plants growing in Grantown, New Providence." (Lab. No. 488.)

18747. Dolichos lablab. **Hyacinth bean.**

"Native name *Bonavis.* A leguminous plant with habits similar to No. 18746. The purple tinge of the stem is absent; flowers are creamy white; seed white, and much relished by the natives in cooking. Seed secured from plants growing in Grantown, New Providence." (Lab. No. 499.)

18748. Pharbitis sp. **Morning-glory.**

"Seed collected from native plants in Nassau, New Providence. Plants climbing, but seldom 4 feet in height; foliage tomentose; flowers pale blue, about 2 inches in diameter, exceedingly ornamental and strikingly different from species of Ipomoea."

18749. Reseda sp. **Mignonette.**

"Seed obtained from Mr. C. H. Matthews, Nassau, New Providence. A very handsome ornamental; leaves pinnatifid, of a silvery white tinge; stems 2 feet, bare, with a long spike of white flowers. A perennial."

18750. Sinapis alba. **White mustard.**

From Moscow, Russia. Received through Immer & Son, June 25, 1906.

Sarepta.

18751. Medicago sativa. **Alfalfa.**

From New York, N. Y. Received through H. Nungesser & Co., June 25, 1906.

Turkestan.

18752 to 18763.

From Singapore, Straits Settlements. Presented by Prof. H. N. Ridley, director of the Botanic Gardens. Received June 29, 1906.

18752. Amorphophallus prainii.
18753. Amorphophallus rex.
18754. Amorphophallus sativus.
18755. Alocasia lowii.
18756. Alocasia grandis.
18757. Alocasia longiloba.
18758. Alocasia indica.
18759. Alocasia singaporensis.
18760. Alocasia macrorhiza.
18761. Xanthosoma violaceum.
18762. Xanthosoma robustum.
18763. Typhonium tribolatum.

18764. Asparagus myriocladus.

From Berea, Durban, Natal. Presented by J. Medley Wood, director of the Natal Botanic Gardens. Received June 30, 1906.

18765. Garcinia xanthochymus.

From Honolulu, Hawaii. Presented by Mr. E. W. Jordan, through Mr. Gerrit P. Wilder. Received July 2, 1906.

18766 to 18770.

From Piracicaba, Brazil. Presented by Dr. J. W. Hart, director of the Agricultural College. Received June 7, 1906.

18766. ANONA sp.

Ariticu or *Cabeca de negro* (negro head). "Segmented fruit, heart-shaped, about 20 centimeters in diameter, sweet, aromatic, edible. Tree 15 meters, spreading, grows on poor, sandy land on the open prairie." (*Hart.*) (No. 16.)

18767. ANONA sp.

Fruita de Conde. "Similar to preceding, but the fruit is much superior. This variety has been domesticated." (*Hart.*) (No. 17.)

18768. ARAUCARIA BRASILIANA.

(No. 22.)

18769. PSIDIUM GUAJAVA. **Guava.**

Red. (No. 12.)

18770. PSIDIUM GUAJAVA. **Guava.**

White. (No. 13.)

18771 and 18772.

From Salisbury, Rhodesia, South Africa. Received from Hon. E. Ross Townsend, Secretary for Agriculture, through Mr. W. A. Driver, Dinuba, Cal., June 30, 1906. (See Nos. 12810 and 12959, Inventory No. 11.)

18771. (Undetermined.) **Marula.**

18772. (Undetermined.) **Matundulaku.**

18773. CARICA PAPAYA. Papaw.

From Manila, P. I. Presented by Mr. W. S. Lyon, norticulturist, Bureau of Agriculture. Received June 29, 1906.

18774 to 18785.

From Mexico. Received through Mr. G. Onderdonk, July 5, 1906.

18774 to 18782. PRUNUS ARMENIACA. **Apricot.**

18774. *Onderdonk's No. 18.*

"From place of C. Ramirez, Lagos, Jalisco. Fruit yellow, light blush, sweet, freestone, circumference 4 inches."

18775. *Onderdonk's No. 19.*

"From place of Francisco Gomez Garcia, Lagos, Jalisco. Fruit white, 4½ inches in circumference."

18776. *Onderdonk's No. 20.*

"From place of Enrique Maupin, Aquascalientes. Fruit yellow, light blush, sweet, 5 inches in circumference."

18777. *Onderdonk's No. 21.*

18778. *Onderdonk's No. 22.*

18779. *Onderdonk's No. 23.*

18780. *Onderdonk's No. 24.*

"Nos. 18777 to 18780 are from Señor Maupin's orchard at Aquascalientes. They are all of the same general character, yellow with faint blush, fruit from 4 to 5 inches in circumference."

18781. *Onderdonk's No. 15.*

Nellie. (See No. 9844, Inventory No. 10.)

18782. *Onderdonk's No. 16.*

Dorah. (See No. 9845, Inventory No. 10.)

18774 to 18785—Continued.

18783. AMYGDALUS PERSICA. **Peach.**

Procured by Mr. Oderdonk's son from El Cobre Mountain, near Guadalajara. "A very large, yellow, clingstone peach."

18784 and 18785. MALUS MALUS. **Apple.**

18784.

Peron. From place of Mr. J. R. Silliman, Saltillo. (See No. 9014, Inventory No. 10.)

18785.

Procured by Mr. Onderdonk's son from El Cobre Mountain. "Very large, rich flavor, greenish color, yellowing slightly as it ripens. No better apple in Mexico."

18786 to 18800.

From La Paz, Bolivia. Presented by Señor M. V. Ballovian, Ministerio de Colonias y Agricultura. Received July 6, 1906.

18786 to 18798. SOLANUM TUBEROSUM. **Potato.**

18786. *Phinu.*
18787. *Lugui.*
18788. *Pitiguilla.*
18789. *Chiarimilla.*
18790. *Khati.*
18791. *Monda.*
18792. *Socco.*
18793. *Ajahuira.*
18794. *Queni.*
18795. *Phureja.*
18796. *Koillu.*
18797. (Label missing.)
18798. *Ajahuira.*

The label for No. 18798, *Ajahuira*, is the same as that for No. 18793, and it is not known to which lot it properly belongs, as the consignment was mixed in transit. The tubers are not alike.

18799 and 18800. OXALIS TUBEROSA. **Oca.**

18799. *Rosada.*
18800. *Morada.*

18801. (Undetermined.)

From Piracicaba, Brazil. Presented by Dr. J. W. Hart, director of the Agricultural College. Received July 7, 1906.

Native name *Caja manga.* (Hart's No. 35.)

18802 to 18823.

From Erfurt, Germany. Received through Messrs. Haage and Schmidt, July 9, 1906.

18802. MEDICAGO MEDIA. **Sand lucern.**

18803. VICIA CALCARATA.
18804. VICIA CORDATA.
18805. VICIA CORNIGERA.
18806. VICIA CUSPIDATA.
18807. VICIA DISPERMA.
18808. VICIA FERRUGINEA.
18809. VICIA GERARDI.
18810. VICIA GLOBOSA.
18811. VICIA GRANDIFLORA.
18812. VICIA HYBRIDA.
18813. VICIA MACROCARPA.
18814. VICIA MICHAUXII.
18815. VICIA NARBONENSIS.
18816. VICIA ONOBRYCHIOIDES.
18817. VICIA PANNONICA.
18818. VICIA PEREGRINA.
18819. VICIA PICTA.
18820. VICIA PSEUDO-CRACCA.
18821. VICIA SPURIA.
18822. VICIA STRIATA.
18823. VICIA TRICOLOR.

18824 to 18826. Oryza sativa. **Rice.**

From Persia. Presented by Mr. John Tyler, United States vice-consul-general, Teheran, Persia. Received July 6, 1906.

Three samples of unhulled rice from the region south of the Caspian Sea. These samples of rice were given to Mr. Tyler by a friend whose official title is "The Sepahdor" (Commander), who owns large areas where rice of the best sorts are grown. The samples received are of three kinds and from three separate districts, but no labels accompanied them to indicate which was which.

18824. Long slender grain, light hull.

18825. Long slender grain, light hull.

18826. Short flat grain, darker hull.

18827. Medicago sativa. **Alfalfa.**

From Chicago, Ill. Received through the A. Dickinson Company, July 9, 1906.

18828. Carica papaya. **Papaw.**

From Columbia, Isle of Pines, West Indies. Presented by Dr. F. R. Ramsdell. Received July 10, 1906.

18829 and 18830. Andropogon sorghum.

From Channing, Tex. Received through Mr. J. J. Edgerton, July 13, 1906.

18829. **Kafir corn.**

Black-Hulled White.

18830. **Milo.**

Dwarf.

18831 to 18834. Cynara scolymus. **Artichoke.**

From Milan, Italy. Received through Fratelli Ingegnoli, July 16, 1906.

18831. *Grosso d' Italian.*
18832. *Violetto di Provenza.*
18833. *Sensa Spine di Venezia.*
18834. *Palla di Roma.*

18835 to 18912. Ficus carica. **Fig.**

From Niles, Cal. Received through the California Nursery Company at the Plant Introduction Garden, Chico, Cal., in March, 1906.

Nos. 18835 to 18898, inclusive, are from the Chiswick collection. A description of these varieties will be found in Bulletin No. 9, Division of Pomology, 1901.

18835. *De l' Archipel.*
18836. *Bontard.*
18837. *Grosse Marseilles.*
18838. *Peau dure.*
18839. *Negronne.*
18840. *Bourjassote noire.*
18841. *Poulette.*
18842. *Œil de Perdrix.*
18843. *Du Roi.*
18844. *Grosse Violette de Bordeaux.*
18845. *Datte.*
18846. *Monstrueuse.*
18847. *Bourjassote Grise.*
18848. *A' Bois Jaspee.*
18849. *Royal Vineyard.*
18850. *De Grasse.*
18851. *Euscaire Preto.*
18852. *Trois Recoltes.*
18853. *Monaco Bianco.*
18854. *Bondance Precoce.*
18855. *Trifer.*
18856. *Green Ischia.*
18857. *Hirta du Japon.*
18858. *St. Johns.*

18835 to 18912—Continued.

18859. *Vebra.*
18860. *Datte Quotidienne.*
18861. *Arbal.*
18862. *De Jerusalem.*
18863. *Nebian.*
18864. *Vigasotte Bianco.*
18865. *Grise Savantine bifere.*
18866. *Quarteria.*
18867. *Douro Vebra.*
18868. *Reculver.*
18869. *Gourand Rouge.*
18870. *D'Agen.*
18871. *Lampa.*
18872. *Large Black Douro.*
18873. *Adam.*
18874. *De Constantine.*
18875. *Biberæo.*
18876. *Grosse Verte.*
18877. *Violette Sepor.*
18878. *Dr. Hoggs Clare.*
18879. *Hardy Prolific.*
18880. *Figue d'Or.*
18881. *Recousse noire.*
18882. *Black Douro.*
18883. *Grassale.*
18884. *Martinique.*
18885. *Crave.*
18886. *White Ischia.*
18887. *Brown Turkey.*
18888. *Pastiliere.*
18889. *Negro Largo.*
18890. *De La Madeleine.*
18891. *Col de Signora Bianco.*
18892. *Doree Nobis.*
18893. *Pingo de Mel.*
18894. *Black Ischia.*
18895. *Toulousienne.*
18896. *Gouraud Noir.*
18897. *Doree.*
18898. *Brunswick.*
18899. *Gentile.*
18900. *White Adriatic.*
18901. *Pacific white.*
18902. *Vendome.*
18903. *Barbillonne.*
18904. *Figuires Blanch.*
18905. *Warren's Brown Turkey.*
18906. *Capri Milco.*
18907. *Trojano.*
18908. *Capri Solms No. 1.*
18909. *Capri Solms No. 2.*
18910. *Capri Solms No. 3.*
18911. *Capri Solms No. 4.*
18912. *Dauphine.*

18913. TRIFOLIUM PRATENSE. **Red clover.**

From Emilia, Italy. Presented by William G. Scarlett & Co., Baltimore, Md. Received in April, 1906.

18914. PINUS KORAIENSIS (?). **Pine.**

From Manchuria. Presented by the Yokohama Nursery Company, Yokohama, Japan. Received July 5, 1905.

Seed of a 5-needled pine obtained at the base of Heirai Mountain, Manchuria.

18915 to 18921. ORYZA SATIVA. **Rice.**

From Cairo, Egypt. Received through Mr. George P. Foaden, secretary of the Khedivial Agricultural Society, July 5, 1906.

18915. *Ein el Bent.*
18916. *Sina.*
18917. *Italien Ranghino.*
18918. *Fino.*
18919. *Agemi.*
18920. *Sultani.*
18921. *Japonais.*

18922 and 18923.

From Kashgar, Eastern Turkestan. Presented by Rev. P. J. P. Hendriks. Received July 20, 1906.

18922. HORDEUM VULGARE. **Barley.**

"A variety which is said to require only one month without frost. Grown in the mountain regions near Kashgar, Eastern Turkestan." (*Hendriks.*)

18923. RICINUS COMMUNIS. **Castor-oil plant.**

Seed of a medium-sized variety.

18924. MANGIFERA INDICA. Mango.

From Miami, Fla. Received through the Subtropical Laboratory and Garden, July 23, 1906.

Turpentine. Seed for growing stocks upon which to inarch standard varieties.

18925. ANONA CHERIMOLIA. Cherimoyer.

From Salta Province, Argentina. Presented by Mr. Ernest Nelson, of Sharon, Mass. Received July 13, 1906.

18926 to 18940. ANDROPOGON SORGHUM. Sorghum.

From Chillicothe, Tex. Grown in 1905 at the Government Farm, and distributed from same place.

18926. *Djougara balki.* Grown from Agrost. No. 1579.

18927. *Planter's Friend.* Grown from Agrost. No. 1604.

18928. *Amber.* Grown from Agrost. No. 1606.

18929. *Amber.* Grown from Agrost. No. 1658.

18930. *Planter's Friend.* Grown from Agrost. No. 1659.

18931. *Amber.* Grown from Agrost. No. 1747.

18932. *Black-seeded.* Grown from Agrost. No. 2114.

18933. *Edra.* Grown from S. P. I. No. 8815.

18934. *Dshugara Balcha.* Grown from S. P. I. No. 9796.

18935. *Dagdi Jowar.* Grown from S. P. I. No. 9856.

18936. *Djugara.* Grown from S. P. I. No. 10612.

18937. *White.* Grown from S. P. I. No. 13317.

18938. *Red.* Grown from S. P. I. No. 13318.

18939. *Gare.* Grown from S. P. I. No. 14504.

18940. *White of Rey Barelly.* Grown from S. P. I. No. 14635.

18941. LATHYRUS SATIVUS. Bitter vetch.

From Clarinda, Iowa. Received through the A. A. Berry Seed Company, July 27, 1906.

18942 to 19057.

From Mexico and southwestern United States. Collected by Mr. David Griffiths, of this Department, and forwarded to the Plant Introduction Garden, Chico, Cal., during the summer of 1905.

The numbers in parentheses are those of Mr. Griffiths.

18942. OPUNTIA sp. **Tuna.**

From El Paso, Tex. (8020.)

18942 to 19057—Continued.

18943. Opuntia sp. **Tuna.**

From El Paso, Tex. (8021.)

18944. Nopalea sp.

From San Mateo, Mexico. (8027.)

18945. Opuntia sp. **Tuna.**

Nopal cristilena. From Cardenas, Mexico. (8030.)

18946 to 19057. Opuntia sp. **Tuna.**

18946. From Cardenas, Mexico. (8031.)
18947. From Cardenas, Mexico. (8032.)
18948. From San Luis Potosi, Mexico. (8034.)
18949. From San Luis Potosi, Mexico. (8035.)
18950. *Nopal Cuijo.* From San Luis Potosi, Mexico. (8036)
18951. *Nopal ranchero.* From San Luis Potosi, Mexico. (8037.)
18952. *Nopal palmito.* From San Luis Potosi, Mexico. (8038.)
18953. From San Luis Potosi, Mexico. (8039.)
18954. *Nopal camueso.* From San Luis Potosi, Mexico. (8040.)
18955. From San Luis Potosi, Mexico. (8041.)
18956. From San Luis Potosi, Mexico. (8042.)
18957. *Nopal tapon.* From San Luis Potosi, Mexico. (8043.)
18958. *Nopal.* From San Luis Potosi, Mexico. (8044.)
18959. *Tuna castilla blanca.* From San Luis Potosi, Mexico. (8045.)
18960. *Nopal charol.* From San Luis Potosi, Mexico. (8046.)
18961. From San Luis Potosi, Mexico. (8047.)
18962. From San Luis Potosi, Mexico. (8048.)
18963. *Nopal jocoquillo.* From San Luis Potosi, Mexico. (8049.)
18964. From San Luis Potosi, Mexico. (8050.)
18965. From Alonzo, Mexico. (8053.)
18966. From Alonzo, Mexico. (8055.)
18967. From San Luis Potosi, Mexico. (8058.)
18968. *Nopal jarrillo.* From San Luis Potosi, Mexico. (8061.)
18969. From San Luis Potosi, Mexico. (8062.)
18970. From San Luis Potosi, Mexico. (8063.)
18971. From San Luis Potosi, Mexico. (8064.)
18972. *Nopal cardon blanco.* From Hepasote, Mexico. (8067.)
18973. *Nopal opalillo.* From Hepasote, Mexico. (8068.)
18974. *Tuna amarilla blanca.* From Hepasote, Mexico. (8069.)
18975. From Hepasote, Mexico. (8071.)
18976. From Hepasote, Mexico. (8072.)
18977 *Mameya.* From Hepasote, Mexico. (8073.)
18978. From Hepasote, Mexico. (8074.)
18979. *Nopal San Juanero.* From Hepasote, Mexico. (8075.)
18980. *Nopal loco.* From Hepasote, Mexico. (8076.)
18981. From Hepasote, Mexico. (8077.)

18942 to 19057—Continued.

18982. *Nopal blanco liso.* From Hacienda Los Campos, Mexico. (8079.)

18983. *Nopal durasnillo.* From Aguascalientes, Mexico. (8081.)

18984. *Nopal durasnillo.* From Aguascalientes, Mexico. (8082.)

18985. From Aguascalientes, Mexico. (8083.)

18986. *Nopal joconoxtle.* From Aguascalientes, Mexico. (8084.)

18987. *Nopal joconoxtle.* From Aguascalientes, Mexico. (8086.)

18988. From Aguascalientes, Mexico. (8087.)

18989. From Aguascalientes, Mexico. (8088.)

18990. *Nopal joconoxtle.* From Aguascalientes, Mexico. (8089.)

18991. From Aguascalientes, Mexico. (8090.)

18992. From Aguascalientes, Mexico. (8091.)

18993. *Nopal tapon.* From Aguascalientes, Mexico. (8092.)

18994. *Spineless.* From Aguascalientes, Mexico. (8094.)

18995. From Aguascalientes, Mexico. (8101.)

18996. From Encarnacion, Mexico. (8102.)

18997. *Nopal liso.* From Encarnacion, Mexico. (8103.)

18998. From Los Sauses, Mexico. (8104.)

18999. *Nopal colorado.* From Los Sauses, Mexico. (8105.)

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19001. From Los Sauses, Mexico. (8107.)

19002. From Los Sauses, Mexico. (8108.)

19003. *Cascaron.* From Los Sauses, Mexico. (8109.)

19004. *Durasnillo.* From Los Sauses, Mexico. (8110.)

19005. From Los Sauses, Mexico. (8111.)

19006. From Dublan, Mexico. (8113.)

19007. From Dublan, Mexico. (8114.)

19008. From Dublan, Mexico. (8114a.)

19009. From Dublan, Mexico. (8115.)

19010. From Dublan, Mexico. (8119.)

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19012. From Guadalajara, Mexico. (8125.)

19013. From Guadalajara, Mexico. (8126.)

19014. From Guadalajara, Mexico. (8127.)

19015. From Guadalajara, Mexico. (8128.)

19016. From Guadalajara, Mexico. (8130.)

19017. From Aguascalientes, Mexico. (8138.)

19018. *Nopal camueso.* From Zacatecas, Mexico. (8140.)

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19022. From Zacatecas, Mexico. (8145.)

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B. T. GALLOWAY, *Chief of Bureau.*

AMERICAN ROOT DRUGS.

BY

ALICE HENKEL,
ASSISTANT, DRUG-PLANT INVESTIGATIONS.

ISSUED OCTOBER 25, 1907.

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Forestry
Bequest of George B. Sudworth
3-13-1930

LETTER OF TRANSMITTAL.

U. S. Department of Agriculture,
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Office of the Chief,
Washington, D. C., April 16, 1907.

Sir: I have the honor to transmit herewith and to recommend for publication as Bulletin No. 107 of the series of this Bureau the accompanying manuscript, entitled "American Root Drugs." This paper was prepared by Miss Alice Henkel, Assistant in Drug-Plant Investigations, and has been submitted by the Physiologist in charge with a view to its publication.

The fifty drugs described include all the "official" roots found in this country, besides such "nonofficial" drugs as are most frequently quoted in drug catalogues.

There is a steady demand for information concerning the medicinal plants of this country, and this bulletin on American root drugs has been prepared as a first installment on the subject. It is intended as a guide and reference book for farmers, drug collectors, druggists, students, and others who may be interested in one way or another in the collection or study of our medicinal flora.

Respectfully,
B. T. Galloway,
Chief of Bureau.

Hon. James Wilson,
Secretary of Agriculture.

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AMERICAN ROOT DRUGS.

INTRODUCTION.

More than half of the root drugs recognized in the Eighth Decennial Revision of the United States Pharmacopœia occur in this country, some native and not growing elsewhere and others introduced. All of the official root drugs found in the United States have been included in this bulletin, as well as such native and introduced "nonofficial" roots (those not at present recognized in the United States Pharmacopœia) as seemed to be most generally quoted in the trade lists of the country, the total number of root drugs described being 50. While the most important root drugs thus given are limited to 50, there are included under each of these, wherever required, brief descriptions of related species. It would be impossible to include within the limits of this paper all of the root drugs that are used in this country, but the aim has been to give information concerning those which seem to be the most important commercially, according to the numerous drug lists that have been consulted.

All of the root drugs herein mentioned occur in quantities sufficient for commercial purposes, but the roots of many of the species that also occur in other countries are nevertheless largely imported.

In speaking of "root drugs" in this paper only those are included of which the underground portion is found in commerce, whether in the form of root, rootstock, bulb, or corm, excluding the roots that are used solely for their bark or for their gums or resins.

Except in the botanical descriptions, the term "roots" is generally used, regardless of the fact that the part under consideration may be a rootstock, root, or bulb. In this the commercial practice is followed, which makes no distinction as to the form of the underground portion as classified by botanists, but catalogues them all under the general term "roots."

The medicinal uses are referred to in only the briefest and most general manner, for it is clearly not within the province of a publication of this character to go into details regarding these matters. The statements made are based on the information contained in various dispensatories and other works relating to materia medica.

The illustrations are for the most part made from a collection of photographs taken from nature by C. L. Lochman. A few have been taken from various publications, mention of which is made under the illustrations in question.

THE COLLECTION OF ROOT DRUGS.

Generally speaking, the roots of annual plants should be dug just before flowering, and those of biennial or perennial plants late in autumn or early in spring, the object being to collect them at a period when there is a cessation of growth; for besides shrinking more and weighing less if collected during the growing season, they are also deficient in medicinal properties. Very frequently a drug is of inferior quality simply because the collector has neglected to gather it in the proper season.

It is unfortunate that so much confusion exists with regard to the common names of American plants. The common name of a plant in one locality may be the same as that of an entirely different plant in another locality, and on account of this confusion the collector is not always sure of the identity of the plant he is collecting, nor the drug dealer as to what he will receive, unless a sample is submitted to him. If more care were exercised in this respect it would mean a saving of time and money to both collector and dealer.

Another important matter that the collector sometimes overlooks is the proper cleaning and drying of the roots. To insure a good market for his crude drugs the collector should be certain not only that he has the right plant, but that it is collected at the proper season of the year, and that he has a clean and thoroughly dried article.

After the roots have been dug they should be freed from dirt and all foreign particles, such as stones and bits of other plants. If the adherent soil can not be removed by shaking the roots, they may, in most instances, be washed in clean water, after which they should be carefully dried. In some cases the roots are sliced or split when green in order to facilitate drying, and wherever this is necessary it will be indicated under the descriptions of the different plants.

For the purpose of drying, the roots should be spread out in thin layers on racks or shelves, or on clean, well-ventilated barn floors or lofts, exposed to light and air but not direct sunlight, and turned occasionally each day until thoroughly dry. If the roots are dried out of doors, they should be placed under shelter at night or upon the approach of damp or rainy weather. Thoroughly dried roots snap readily when bent, and it requires from three to six weeks to cure roots, depending upon the weather conditions and the character of the roots.

Burlap or gunny sacks, or dry, clean barrels may be used for packing the roots for shipment.

The collector should always communicate with the dealers concerning the drugs to be disposed of, sending them a representative sample, plainly marked as to contents, with the name and address of the sender, and stating how large a quantity can be furnished.

The prices per pound mentioned in this bulletin will serve to give the collector an idea as to what he may expect to receive from dealers, but, as with other commodities, depending for their prices upon supply and demand, fluctuations are likely to occur from year to year. An increased demand or a shortage will send prices upward and stimulate collection, which in turn may result in glutting the market, and a decline in prices naturally follows. It is possible, therefore, to give only an approximate range of prices.

PLANTS FURNISHING ROOT DRUGS.

Under each plant will be found synonyms and pharmacopœial name, if any, the common names, habitat, range, descriptions of the plant and root, and information concerning collection, prices, and uses, while in the case of goldenseal and ginseng the methods of culture are included.

MALE-FERN.

(1) *Dryopteris filix-mas* (L.) Schott and (2) *Dryopteris marginalis* (L.) A. Gray.

Synonyms.—(1) *Aspidium filix-mas* Sw. (2) *Aspidium marginale* Sw.

Pharmacopœial name.—Aspidium.

Other common names.—(1) Male shield-fern, sweet brake, knotty brake, basket-fern, bear's-paw root; (2) marginal-fruited shield-fern, evergreen wood-fern.

Habitat and range.—These ferns are found in rocky woods, the male shield-fern inhabiting the region from Canada westward to the Rocky Mountains and Arizona. It is widely distributed also through Europe, northern Asia, northern Africa, and South America. The marginal-fruited shield-fern (Pl. I, fig. 1), one of our most common ferns, occurs from Canada southward to Alabama and Arkansas.

Description of plants.—Both of these species are tall, handsome ferns, the long, erect fronds, or leaves, arising from a chaffy, scaly base, and consisting of numerous crowded stemless leaflets, which are variously divided and notched. There is but little difference between these two species. The male shield-fern is perhaps a trifle stouter, the leaves growing about 3 feet in length and having a bright-green color, whereas the marginal-fruited shield-fern has lighter green leaves, about 2½ feet in length, and is of more slender appearance. The principal difference, however, is found in the arrangement of the "sori," or "fruit dots." These are the very small, round, tawny dots that are found on the backs of fern leaves, and in the male shield-fern these will be found arranged in short rows near the midrib, while in the marginal-fruited shield-fern, as this name indicates, the fruit dots are placed on the margins of the fronds. Both plants are perennials and members of the fern family (Polypodiaceæ).

Description of the rootstock.—These ferns have stout ascending or erect chaffy rootstocks, or rhizomes (Pl. I, fig. 1) as they are technically known. As taken from the ground the rootstock is from 6 to 12 inches in length and 1 to 2 inches thick, covered with closely overlapping, brown, slightly curved stipe bases or leaf bases and soft, brown, chaffy scales. The inside of the rootstock is pale green. As found in the stores, however, male-fern with the stipe bases and roots removed measures about 3 to 6 inches in length and about one-half to 1 inch in thickness, rough where the stipe bases have been removed, brown outside, pale green and rather spongy inside.

The stipe bases remain green for a very long period, and these small, claw-shaped, furrowed portions, or "fingers" as they are called, form a large proportion of the drug found on the American market and, in fact, are said to have largely superseded the rootstock. Male-fern has a disagreeable odor, and the taste is described as bitter-sweet, astringent, acrid, and nauseous.

Collection, prices, and uses.—The best time for collecting male-fern root is from July to September. The root should be carefully cleaned, but not washed, dried out of doors in the shade as quickly as possible, and shipped to druggists at once. The United States Pharmacopœia directs that "the chaff, together with the dead portions of the rhizome and stipes, should be removed, and only such portions used as have retained their internal green color."

Great care is necessary in the preservation of this drug in order to prevent it from deteriorating. If kept too long, its activity will be impaired, and it is said that it will retain its qualities much longer if it is not peeled until required for use. The unreliability sometimes attributed to this drug can in most instances be traced to the presence of the rootstocks of other ferns with which it is often adulterated, or it will be found to be due to improper storing or to the length of time that it has been kept.

The prices paid for male-fern root range from 5 to 10 cents a pound.

Male-fern, official in the United States Pharmacopœia, has been used since the remotest times as a remedy for worms. Grave results are sometimes caused by overdoses.

COUCH-GRASS.

Agropyron repens (L.) Beauv.

Synonym.—*Triticum repens* L.

Pharmacopœial name.—Triticum.

Other common names.—Dog-grass, quick-grass, quack-grass, quitch-grass, quake-grass, scutch-grass, twitch-grass, witch-grass, wheat-grass, creeping wheat-grass, devil's-grass, durfa-grass, Durfee-grass, Dutch-grass, Fin's-grass, Chandler's-grass.

Habitat and range.—Like many of our weeds, couch-grass was introduced from Europe, and is now one of the worst pests the farmer has to contend with, taking possession of cultivated ground and crowding out valuable crops. It occurs most abundantly from Maine to Maryland, westward to Minnesota and Missouri, and is spreading on farms on the Pacific slope, but is rather sparingly distributed in the South.

Description of plant.—Couch-grass is rather coarse, 1 to 3 feet high, and when in flower very much resembles rye or beardless wheat (fig. 1). Several round, smooth, hollow stems, thickened at the joints, are produced from the long, creeping, jointed rootstock. The stems bear 5 to 7 leaves from 3 to 12 inches long, rough on the upper surface and smooth beneath, while the long, cleft leaf sheaths are smooth. The solitary terminal flowering heads or spikes are compressed, and consist of two rows of spikelets on a wavy and flattened axis. These heads are produced from July to September. Couch-grass belongs to the grass family (Poaceæ).

Description of rootstock.—The pale-yellow, smooth rootstock is long, tough, and jointed, creeping along underneath the ground and pushing in every direction. As found in the stores, it consists of short, angular pieces, from one-eighth to one-fourth of an inch long, of a shining straw color, and hollow. These pieces are odorless, but have a somewhat sweetish taste.

Collection, prices, and uses.—Couch-grass, which is official in the United States Pharmacopœia, should be collected in spring, carefully cleaned, and the rootlets removed. The rootstock (not the rootlets) is then cut into short pieces, about two-fifths of an inch in length, for which purpose an ordinary feed-cutting machine may be used, and thoroughly dried.

Couch-grass is usually destroyed by plowing up and burning, for if any of the joints are permitted to remain in the soil new plants will be produced. But, instead of burning, the rootstocks may be saved and prepared for the drug market in the manner above stated. The prices range from 3 to 5 cents a pound. At present couch-grass is collected chiefly in Europe.

A fluid extract is prepared from couch-grass, which is used in affections of the kidney and bladder.

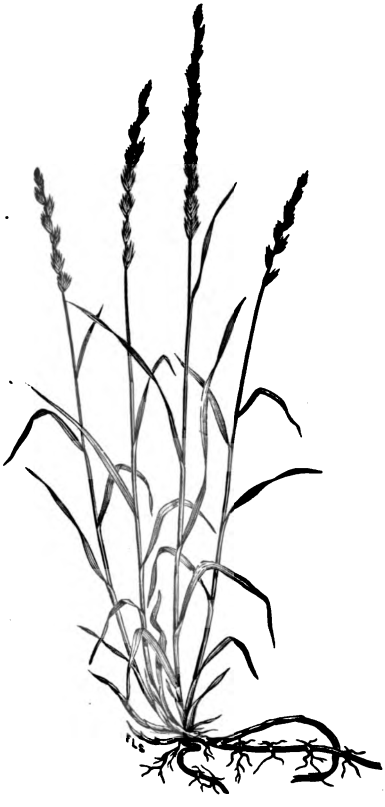

FIG. 1.—Couch-grass (*Agropyron repens*).

WILD TURNIP.

Arisaema triphyllum (L.) Torr.

Synonym.—*Arum triphyllum* L.

Other common names.—Arum, three-leaved arum, Indian turnip, jack-in-the-pulpit, wake-robin, wild pepper, dragon-turnip, brown dragon, devil's-ear, marsh-turnip, swamp-turnip, meadow-turnip, pepper-turnip, starchwort, bog-onion, priest's-pintle, lords-and-ladies.

Habitat and range.—Wild turnip inhabits moist woods from Canada to Florida and westward to Kansas and Minnesota.

Description of plant.—Early in April the quaint green and brownish purple hooded flowers of the wild turnip may be seen in the shady depths of the woods.

It is a perennial plant belonging to the arum family (Araceæ), and reaches a height of from 10 inches to 3 feet. The leaves, of which there are only one or two, unfold with the flowers; they are borne on long, erect, sheathing stalks, and consist of three smooth, oval leaflets; the latter are 3 to 6 inches long, and from 1½ to 3½ inches wide, net veined, and with one vein running parallel with the margins. The "flower" is curiously formed, somewhat like the calla lily, consisting of what is known botanically as a spathe, within which is inclosed the spadix. The spathe is an oval, leaflike part, the lower portion of which, in the flower under consideration, is rolled together so as to form a tube, while the upper, pointed part is usually bent forward, thus forming a flap or hood over the tube-shaped part which contains the spadix. (Fig. 2.) In fact it is very similar to the familiar flower of the calla lily of the gardens, except that, instead of being white, the wild turnip is either all green or striped with very dark purple, sometimes seeming almost black, and in the calla lily the "flap" is turned back, whereas in the wild turnip it is bent forward over the tube. Inside of the spathe is the spadix, also green or purple, which is club shaped, rounded at the summit, and narrowly contracted at the base, where it is surrounded by either the male or female flowers or both, in the latter case (the most infrequent) the male flowers being placed below the female flowers. In autumn the fruit ripens in the form of a bunch of bright scarlet, shining berries. The entire plant is acrid, but the root more especially so.

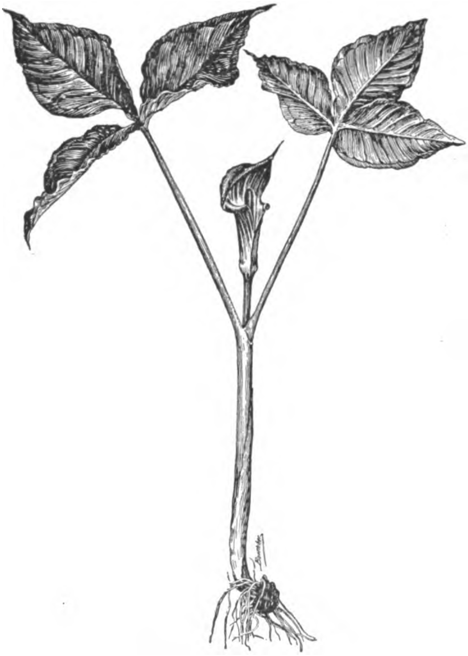

FIG. 2.—Wild turnip (*Arisaema triphyllum*).

Description of "root."—The underground portion of this plant is known botanically as a "corm," and is somewhat globular and shaped like a turnip. The lower part of the corm is flat and wrinkled, while the upper part is surrounded by coarse, wavy rootlets. The outside is brownish gray and the inside white and mealy. It has no odor, but an intensely acrid, burning taste, and to those who may have been induced in their school days to taste of this root wild turnip will be familiar chiefly on account of its never-to-be-forgotten acrid, indeed caustic, properties. The dried article of commerce consists of round, white slices, with brown edges, only slightly shrunken, and breaking with a starchy fracture.

Collection, prices, and uses.—The partially dried corm is used in medicine. It is dug in summer, transversely sliced, and dried. When first dug it is intensely acrid, but drying and heat diminish the acridity. It loses its acridity rapidly with age. Wild turnip brings from 7 to 10 cents a pound.

The corm of wild turnip, which was official in the United States Pharmacopœia from 1820 to 1870, is used as a stimulant, diaphoretic, expectorant, and irritant.

SKUNK-CABBAGE.

Spathyema foetida (L.) Raf.

Synonyms.—*Dracontium foetidum* L.; *Symplocarpus foetidus* Nutt.

Other common names.—Dracontium, skunkweed, polecat-weed, swamp-cabbage, meadow-cabbage, collard, fetid hellebore, stinking poke, pockweed.

Habitat and range.—Swamps and other wet places from Canada to Florida, Iowa, and Minnesota abound with this ill-smelling herb.

Description of plant.—Most of the common names applied to this plant, as well as the scientific names, are indicative of the most striking characteristic of this early spring visitor, namely, the rank, offensive, carrion odor that emanates from it. Skunk-cabbage is one of the very earliest of our spring flowers, appearing in February or March, but it is safe to say that it is not likely to suffer extermination at the hands of the enthusiastic gatherer of spring flowers. In the latitude of Washington skunk-cabbage has been known to be in flower in December.

It is a curious plant, with its hood-shaped, purplish striped flowers appearing before the leaves. It belongs to the arum family (Araceæ) and is a perennial. The "flower" is in the form of a thick, ovate, swollen spathe, about 3 to 6 inches in height, the top pointed and curved inward, spotted and striped with purple and yellowish green. The spathe is not open like that of the wild turnip or calla lily, to which family this plant also belongs, but the edges are rolled inward, completely hiding the spadix. In this plant the spadix is not spike-like, as in the wild turnip, but is generally somewhat globular, entirely covered with the numerous, dull-purple flowers. (Pl. I, fig. 2.) After the fruit has ripened the spadix will be found to have grown considerably, the spathe meantime having decayed.

The leaves, which appear after the flower, are numerous and very large, about 1 to 3 feet in length and about 1 foot in width; they are thin in texture, but prominently nerved with fleshy nerves, and are borne on deeply channeled stems.

Description of rootstock.—Skunk-cabbage has a thick, straight, reddish brown rootstock, from 3 to 5 inches long, and about 2 inches in diameter, and having a whorl of crowded fleshy roots (Pl. I, fig. 2) which penetrate the soil to considerable depth. The dried article of commerce consists of either the entire rootstock and roots, which are dark brown and wrinkled on the outside, whitish and starchy within, or of very much compressed, wrinkled, transverse slices. When bruised, the root has the characteristic fetid odor of the plant and possesses a sharp acrid taste, both of which become less the longer the root is kept.

Collection, prices, and uses.—The rootstock of skunk-cabbage should be collected early in spring, soon after the appearance of the flower, or after the seeds have ripened, in August or September. It should be carefully dried, either in its entire state or deprived of the roots and cut into transverse slices. Skunk-cabbage loses its odor and acridity with age, and should therefore not be kept longer than one season. The range of prices is from 4 to 7 cents a pound.

Skunk-cabbage, official from 1820 to 1880, is used in affections of the respiratory organs, in nervous disorders, rheumatism, and dropsical complaints.

SWEET-FLAG.

Acorus calamus L.

Pharmacopœial name.—Calamus.

Other common names.—Sweet cane, sweet grass, sweet myrtle, sweet rush, sweet sedge, sweet segg, sweetroot, cinnamon-sedge, myrtle-flag, myrtle-grass, myrtle-sedge, beewort.

Habitat and range.—This plant frequents wet and muddy places and borders of streams from Nova Scotia to Minnesota, southward to Florida and Texas, also occurring in Europe and Asia. It is usually partly immersed in water, and is generally found in company with the cat-tail and other water-loving species of flag.

Description of plant.—The swordlike leaves of the sweet-flag resemble those of other flags so much that before the plant is in flower it is difficult to recognize simply by the appearance of its leaves. The leaves of the blue flag or "poison-flag," as it has been called, are very similar to those of the sweet-flag, and this resemblance often leads to cases of poisoning among children who thus mistake one for the other. However, as the leaves of the sweet-flag are fragrant, the odor will be a means of recognizing it. Of course when the sweet-flag is in flower the identification of the plant is easy.

The sheathing leaves of this native perennial, which belongs to the arum family (Araceæ), are from 2 to 6 feet in height and about 1 inch in width; they are sharp pointed and have a ridged midrib running their entire length. The flowering head, produced from the side of the stalk, consists of a fleshy spike sometimes 3½ inches long and about one-half inch in thickness, closely covered with very small greenish yellow flowers, which appear from May to July. (Pl. I, fig. 3.)

Description of rootstock.—The long, creeping rootstock of the sweet-flag is thick and fleshy, somewhat spongy, and producing numerous rootlets. (Pl. I, fig. 3.) The odor is very aromatic and agreeable, and the taste pungent and bitter. The dried article, as found in the stores, consists of entire or split pieces of various lengths, from 3 to 6 inches, light brown on the outside with blackish spots, sharply wrinkled lengthwise, the upper surface marked obliquely with dark leaf scars, and the lower surface showing many small circular scars, which, at first glance, give one the impression that the root is worm-eaten, but which are the remains of rootlets that have been removed from the rootstock. Internally the rootstock is whitish and of a spongy texture. The aromatic odor and pungent, bitter taste are retained in the dried article.

Collection, prices, and uses.—The United States Pharmacopœia directs that the unpeeled rhizome, or rootstock, be used. It is collected either in early spring or late in autumn. It is pulled or grubbed from the soft earth, freed from adhering dirt, and the rootlets removed, as these are not so aromatic and more bitter. The rootstock is then carefully dried, sometimes by means of moderate heat. Sweet-flag deteriorates with age and is subject to the attacks of worms. It loses about three-fourths of its weight in drying.

Some of the sweet-flag root found in commerce consists of handsome white pieces. These usually come from Germany, and have been peeled before drying, but they are not so strong and aromatic as the unpeeled roots. Unpeeled sweet-flag root brings from 3 to 6 cents a pound.

Sweet-flag is employed as an aromatic stimulant and tonic in feeble digestion. The dried root is frequently chewed for the relief of dyspepsia.

CHAMAELIRIUM, OR HELONIAS.

Chamaelirium luteum (L.) A. Gray.

Synonym.—Helonias dioica Pursh.

Other common names.—Unicorn-root, false unicorn-root, blazingstar, drooping starwort, starwort, devil's-bit, unicorn's-horn.

In order to avoid the existing confusion of common names of this plant, it is most desirable to use the scientific names Chamaelirium or Helonias exclusively. Chamaelirium is the most recent botanical designation and will be used throughout this article, but the synonym Helonias is a name very frequently employed by the drug trade. The plant with which it is so much confused, *Aletris farinosa,* will also be designated throughout by its generic name, Aletris.

Habitat and range.—This native plant is found in open woods from Massachusetts to Michigan, south to Florida and Arkansas.

Description of plant.—Chamaelirium and Aletris (*Aletris farinosa*) have long been confused by drug collectors and others, owing undoubtedly to the transposition of some of their similar common names, such as "starwort" and "stargrass." The plants can scarcely be said to resemble each other, however, except perhaps in their general habit of growth. (See Pl. II, figs. 1 and 2.)

The male and female flowers of Chamaelirium are borne on separate plants, and in this respect are entirely different from Aletris; neither do the flowers resemble those of Aletris.

Chamaelirium is an erect, somewhat fleshy herb, perennial, and belongs to the bunchflower family (Melanthiaceæ). The male plant grows to a height of from 1½ to 2½ feet, and the female plant is sometimes 4 feet tall and is also more leafy.

The plants have both basal and stem leaves, whereas Aletris has only the basal leaves. The basal leaves of Chamaelirium are broad and blunt at the top, narrowing toward the base into a long stem; they are sometimes so much broadened at the top that they may be characterized as spoon shaped, and are from 2 to 8 inches long and from one-half to 1½ inches wide. The stem leaves are lance shaped and sharp pointed, on short stems or stemless. (Pl. II, fig. 1.)

The white starry flowers of Chamaelirium are produced from June to July, those of the male plant being borne in nodding, graceful, plumelike spikes 3 to 9 inches long (Pl. II, fig. 1) and those of the female plant in erect spikes. The many-seeded capsule is oblong, opening by three valves at the apex.

Another species is now recognized, *Chamaelirium obovale* Small, which seems to differ chiefly in having larger flowers and obovoid capsules.

Description of rootstock.—The rootstock of Chamaelirium does not in the least resemble that of Aletris, with which it is so generally confused. It is from one-half to 2 inches in length, generally curved upward at one end in the form of a horn (whence the common name, "unicorn") and having the appearance of having been bitten off. (Pl. II, fig. 1.) It is of a dark-brown color, with fine transverse wrinkles, rough, on the upper surface showing a few stem scars, and giving off from all sides numerous brown fibrous rootlets. The more recent rootlets have a soft outer covering, which in the older rootlets has worn away, leaving the fine but tough and woody whitish center. The rootlets penetrate to the central part of the rootstock, and this serves as a distinguishing character from Aletris, as a transverse section of Chamaelirium very plainly shows these fibers extending some distance within the rootstock. Furthermore, the rootstock of Chamaelirium exhibits a number of small holes wherever these rootlets have broken off, giving it the appearance of having become "wormy." It is hard and horny within and has a peculiar odor and a very bitter, disagreeable taste, whereas Aletris is not at all bitter.

Collection, prices, and uses.—Chamaelirium should be collected in autumn. The prices paid to collectors may be said to range from about 30 to 45 cents a pound. In the fall of 1906 a scarcity of this root was reported. As already indicated, Chamaelirium and Aletris are often gathered and mistaken for each other by collectors, but, as will be seen from the preceding description, there is really no excuse for such error.

From the confusion that has existed properties peculiar to the one plant have also been attributed to the other, but it seems now generally agreed that Chamaelirium is of use especially as a tonic in derangements of women.

AMERICAN HELLEBORE.

Veratrum viride Ait.

Pharmacopœial name.—Veratrum.

Other common names.—True veratrum, green veratrum, American veratrum, green hellebore, swamp-hellebore, big hellebore, false hellebore, bear-corn, bugbane, bugwort, devil's-bite, earth-gall, Indian poke, itchweed, tickleweed, duckretter.

Habitat and range.—American hellebore is native in rich wet woods, swamps, and wet meadows, its range extending from Canada, Alaska, and Minnesota south to Georgia.

Description of plant.—Early in spring, usually in company with the skunk-cabbage, the large, bright-green leaves of American hellebore make their way through the soil, their straight, erect leaf spears forming a conspicuous feature of the yet scanty spring vegetation. Later in the season a stout and erect leafy stem is sent up, sometimes growing as tall as 6 feet. It is solid and round, pale green, very leafy, and closely surrounded by the sheathing bases of the leaves, unbranched except in the flowering head. The leaves are hairy, prominently nerved, folded or pleated like a fan. They have no stems, but their bases encircle or sheathe the main stalk, and are very large, especially the lower ones, which are from 6 to 12 inches in length, from 3 to 6 inches in width, and broadly oval. As they approach the top of the plant the leaves become narrower. The flowers, which appear from May to July, are greenish yellow and numerous, and are borne in rather open clusters. American hellebore belongs to the bunchflower family (Melanthiaceæ) and is a perennial.

This species is a very near relative of the European white hellebore (*Veratrum album* L.), and in fact has by some been regarded as identical with it, or at least as a variety of it. It is taller than *V. album* and has narrower leaves and greener flowers. Both species are official in the United States Pharmacopœia.

Description of rootstock.—The fresh rootstock of American hellebore is ovoid or obconical, upright, thick, and fleshy, the upper part of it arranged in layers, the lower part of it more solid, and producing numerous whitish roots from all sides. In the fresh state it has a rather strong, disagreeable odor. As found in commerce, American hellebore rootstock is sometimes entire, but more generally sliced, and is of a light-brown or dark-brown color externally and internally yellowish white; the roots, which are from 4 to 8 inches long, have a shriveled appearance, and are brown or yellowish. There is no odor to the dried rootstock, but when powdered it causes violent sneezing. The rootstock, which has a bitter and very acrid taste, is poisonous.

Collection, prices, and uses.—American hellebore should be dug in autumn after the leaves have died, and washed and carefully dried, either in the whole state or sliced in various ways. It deteriorates with age, and should therefore not be kept longer than a year.

The adulterations sometimes met with are the rootstocks of related plants, and the skunk-cabbage is also occasionally found mixed with it, but this is probably unintentional, as the two plants usually grow close together.

Collectors of American hellebore root receive from about 3 to 10 cents a pound.

American hellebore, official in the United States Pharmacopœia, is an acrid, narcotic poison, and has emetic, diaphoretic, and sedative properties.

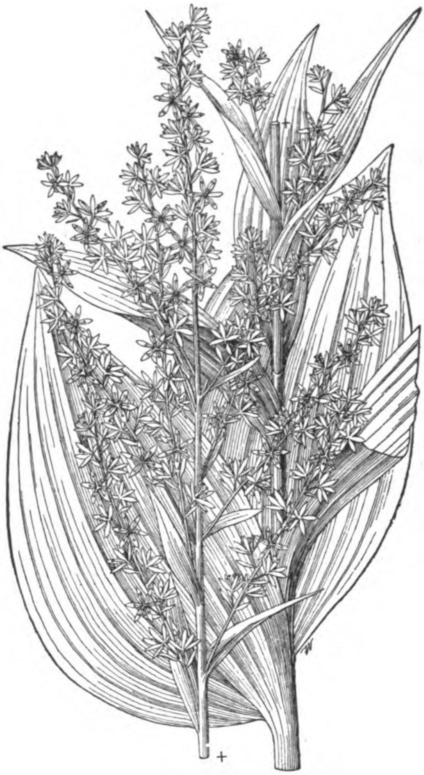

FIG. 3.—American hellebore (*Veratrum viride*).

ALETRIS.

Aletris farinosa L.

Other common names.—Stargrass, blazingstar, mealy starwort, starwort, unicorn-root, true unicorn-root, unicorn-plant, unicorn's-horn, colicroot, devil's-bit, ague-grass, agueroot, aloe-root, crow-corn, huskwort.

A glance at these common names will show many that have been applied to other plants, especially to Chamaelirium, with which Aletris is so much confused. In order to guard against this confusion as much as possible, it is best not to use the common names of this plant at all, referring to it only by its generic name, Aletris.

Habit and range.—Aletris occurs in dry, generally sandy soil, from Maine to Minnesota, Florida, and Tennessee.

Description of plant.—As stated under Chamaelirium, this plant is often confused with the former by collectors and others, although there seems to be no good reason why this should be so. The plants do not resemble each other except in habit of growth (see Pl. II, figs. 1 and 2), and the trouble undoubtedly arose from a confusion of the somewhat similar common names of the plants, as, for instance, "stargrass" and "starwort."

Aletris may be at once distinguished by the grasslike leaves, which spread out on the ground in the form of a star, and by the slender spikes of rough, mealy flowers.

This native perennial, belonging to the lily family (Liliaceæ), is an erect, slender herb, 1½ to 3 feet tall, with basal leaves only. These leaves are grasslike, from 2 to 6 inches long, and have a yellowish green or willow-green color. As already stated, they surround the base of the stem in the form of a star. Instead of stem leaves, there are very small, leaflike bracts placed at some distance apart on the stem. From May to July the erect flowering spike, from 4 to 12 inches long, is produced, bearing white, urn-shaped flowers, sometimes tinged with yellow at the apex, and having a rough, wrinkled and mealy appearance. (Pl. II, fig. 2.) The seed capsule is ovoid, opening by three valves, and containing many seeds. When the flowers in the spike are still in bud, there is a suggestion of resemblance to the female spike of Chamaelirium with its fruit half formed.

Several other species are recognized by botanists, namely, *Aletris aurea* Walt., *A. lutea* Small, and *A. obovata* Nash, but aside from the flowers, which in *aurea* and *lutea* are yellow, and slight variations in form, such as a more contracted perianth, the differences are not so pronounced that the plants would require a detailed description here. They have undoubtedly been collected with *Aletris farinosa* for years, and are sufficiently like it to be readily recognized.

Description of rootstock.—Not only have the plants of Aletris and Chamaelirium been confused, but the rootstocks as well. There is, however, no resemblance between them.

Aletris has a horizontal rootstock from one-half to 1½ inches in length, rough and scaly, and almost completely hidden by the fibrous roots and remains of the basal leaves. Upon close examination the scars of former leaf stems may be seen along the upper surface. The rootlets are from 2 to 10 inches in length, those of recent growth whitish and covered with several layers of epidermis which gradually peel off, and the older rootlets of the rootstock showing this epidermis already scaled off, leaving only the hard, brown, woody center. The rootstock in commerce almost invariably shows at one end a tuft of the remains of the basal leaves, which do not lose their green color. It is grayish brown outside, whitish within, and breaks with a mealy fracture. It has no odor, and a starchy taste, followed by some acridity, *but no bitterness.*

Collection, prices, and uses.—Aletris should be collected in autumn, and there is no reason why collectors should make the common mistake of confusing Aletris with Chamaelirium. By comparing the description of Aletris with that of Chamaelirium, it will be seen that there is scarcely any resemblance. Aletris ranges from 30 to 40 cents a pound.

As indicated under Chamaelirium, the medicinal properties have also been considered the same in both plants, but Aletris is now regarded of value chiefly in digestive troubles. Aletris was official in the United States Pharmacopœia from 1820 to 1870.

BETHROOT.

Trillium erectum L.

Other common names.—Trillium, red trillium, purple trillium, ill-scented trillium, birthroot, birthwort, bathwort, bathflower, red wake-robin, purple wake-robin, ill-scented wake-robin, red-benjamin, bumblebee-root, daffydown-dilly, dishcloth, Indian balm, Indian shamrock, nosebleed, squawflower, squawroot, wood-lily, true-love, orange-blossom. Many of these names are applied also to other species of Trillium.

Habitat and range.—Bethroot is a native plant growing in rich soil in damp, shady woods from Canada south to Tennessee and Missouri.

Description of plant.—This plant is a perennial belonging to the lily-of-the-valley family (Convallariaceæ). It is a low growing plant, from about 8 to 16 inches in height, with a rather stout stem, having three leaves arranged in a whorl near the top. These leaves are broadly ovate, almost circular in outline, sharp pointed at the apex and narrowed at the base, 3 to 7 inches long and about as wide, and practically stemless.

Not only the leaves of this plant, but the flowers and parts of the flowers are arranged in threes, and this feature will serve to identify the plant. (Pl. I, fig. 4.) The solitary terminal flower of bethroot has three sepals and three petals, both more or less lance shaped and spreading, the former greenish, and the petals, which are 1¼ inches long and one-half inch wide, are sometimes dark purple, pink, greenish, or white. The flower has an unpleasant odor. It appears from April to June and is followed later in the season by an oval, reddish berry.

Various other species of Trillium are used in medicine, possessing properties similar to those of the species under consideration. These are also very similar in appearance to *Trillium erectum*.

Description of root.—Bethroot (Pl. I, fig. 4), as found in the stores, is short and thick, of a light-brown color externally, whitish or yellowish inside, somewhat globular or oblong in shape, and covered all around with numerous pale-brown, shriveled rootlets. The top of the root generally shows a succession of fine circles or rings, and usually bears the remains of stem bases.

The root has a slight odor, and is at first sweetish and astringent, followed by a bitter and acrid taste. When chewed it causes a flow of saliva.

Collection, prices, and uses.—Bethroot is generally collected toward the close of summer. The price ranges from 7 to 10 cents a pound.

It was much esteemed as a remedy among the Indians and early settlers. Its present use is that of an astringent, tonic, and alterative, and also that of an expectorant.

WILD YAM.

Dioscorea villosa L.

Other common names.—Dioscorea, colicroot, rheumatism-root, devil's-bones.

Habitat and range.—Wild yam grows in moist thickets, trailing over adjacent shrubs and bushes, its range entending from Rhode Island to Minnesota, south to Florida and Texas. It is most common in the central and southern portions of the United States.

Description of plant.—This native perennial vine is similar to and belongs to the same family as the well-known cinnamon vine of the gardens—namely, the yam family (Dioscoreaceæ). It attains a length of about 15 feet, the stem smooth, the leaves heart shaped and 2 to 6 inches long by 1 to 4 inches wide.

The leaves, which are borne on long, slender stems, are thin, green, and smooth on the upper surface, paler and rather thickly hairy on the under surface. The small greenish yellow flowers are produced from June to July, the male flowers borne in drooping clusters about 3 to 6 inches long, and the female flowers in drooping spikelike heads. The fruit, which is in the form of a dry, membranous, 3-winged, yellowish green capsule, ripens about September and remains on the vine for some time during the winter. (Pl. II, fig. 3.)

Growing farther south than the species above mentioned is a variety for which the name *glabra* has been suggested.

According to C. G. Lloyd (King's American Dispensatory, Vol. I, 1898), there is a variety of *Dioscorea villosa* the root of which first made its appearance among the true yam roots of commerce, and which was so different in form that it was rejected as an adulteration. The plant, however, from which the false root was derived was found upon investigation to be almost identical with the true yam, except that the leaves were perfectly smooth, lacking the hairiness on the under surface of the leaf which is characteristic of the true wild yam. The false variety also differs in its habit of growth, not growing in dense clumps like the true wild yam, but generally isolated. The root of the variety, however, is quite distinct from that of the true wild yam, being much more knotty. Lloyd states further that the hairiness or lack of hairiness on the under side of the leaf is a certain indication as to the form of the root.

Lloyd, recognizing the necessity of classifying these two yam roots of commerce, has designated the smooth-leaved variety as *Dioscorea villosa* var. *glabra.*

Description of rootstocks.—The rootstock of the true wild yam (Pl. II, fig. 3) runs horizontally underneath the surface of the ground. As found in commerce, it consists of very hard pieces, 6 inches and sometimes 2 feet in length, but only about one-fourth or one-half of an inch in diameter, twisted, covered with a thin brown bark, whitish within, and showing stem scars almost an inch apart on the upper surface, small protuberances on the sides, and numerous rather wiry rootlets on the lower surface.

The false wild yam, on the other hand, has a much heavier, rough, knotty rootstock, with thick branches from 1 inch to 3 inches long, the upper surface covered with crowded stem scars and the lower side furnished with stout wiry rootlets. Within it is similar to the true yam root.

Collection, prices, and uses.—The roots are generally collected in autumn, and bring from 2½ to 4 cents a pound. Wild yam is said to possess expectorant properties and to promote perspiration, and in large doses proving emetic. It has been employed in bilious colic, and by the negroes in the South in the treatment of muscular rheumatism.

BLUE FLAG.

Iris versicolor L.

Other common names.—Iris, flag-lily, liver-lily, snake-lily, poison-flag, water-flag, American fleur-de-lis or flower-de-luce.

Habitat and range.—Blue flag delights in wet, swampy localities, making its home in marshes, thickets, and wet meadows from Newfoundland to Manitoba, south to Florida and Arkansas.

Description of plant.—The flowers of all of the species belonging to this genus are similar, and are readily recognized by their rather peculiar form, the three outer segments or parts reflexed or turned back and the three inner segments standing erect.

Blue flag is about 2 to 3 feet in height, with an erect stem sometimes branched near the top, and sword-shaped leaves which are shorter than the stem, from one-half to 1 inch in width, showing a slight grayish "bloom," and sheathing at the base. This plant is a perennial belonging to the iris family (Iridaceæ), and is a native of this country. June is generally regarded as the month for the flowering of the blue flag, although it may be said to be in flower from May to July, depending on the locality. The flowers are large and very handsome, each stem bearing from two to six or more. They consist of six segments or parts, the three outer ones turned back and the three inner ones erect and much smaller. (Pl. II, fig. 4.) The flowers are usually purplish blue, the "claw," or narrow base of the segments, variegated with yellow, green, or white and marked with purple veins.

All of the species belonging to this genus are more or less variegated in color; hence the name "iris," meaning "rainbow," and the specific name "versicolor," meaning "various colors." The name "poison-flag" has been applied to it on account of the poisonous effect it has produced in children, who, owing to the close resemblance of the plants before reaching the flowering stage, sometimes mistake it for sweet-flag.

The seed capsule is oblong, about 1½ inches long, and contains numerous seeds.

Description of rootstock.—Blue flag has a thick, fleshy, horizontal rootstock, branched, and producing long fibrous roots. (Pl. II, fig. 4.) It resembles sweet-flag (Calamus), and has been mistaken for it. The sections of the rootstock of blue flag, however, are flattened above and rounded below; the scars of the leaf sheaths are in the form of rings, whereas in sweet-flag the rootstock is cylindrical and the scars left by the leaf sheaths are obliquely transverse. Furthermore, there is a difference in the arrangement of the roots on the rootstock, the scars left by the roots in blue flag being close together generally nearer the larger end, while in sweet-flag the disposition of the roots along the rootstock is quite regular. Blue flag is grayish brown on the outside when dried, and sweet-flag is light brown or fawn colored. Blue flag has no well-marked odor, and the taste is acrid and nauseous, and in sweet-flag there is a pleasant odor and bitter, pungent taste.

Collection, prices, and uses.—Blue flag is collected in autumn, and usually brings from about 7 to 10 cents a pound. Great scarcity of blue flag root was reported from the producing districts in the autumn of 1906. It is an old remedy, the Indians esteeming it highly in stomach troubles, and it is said that it was sometimes cultivated by them in near-by ponds on account of its medicinal value. It has also been used as a domestic remedy, and is regarded as an alterative, diuretic, and purgative. It was official in the United States Pharmacopœia of 1890.

LADY'S-SLIPPER.

(1) *Cypripedium hirsutum* Mill. and (2) *Cypripedium parviflorum* Salisb.

Synonym.—(1) *Cypripedium pubescens* Willd.

Pharmacopœial name.—Cypripedium.

Other common names.—(1) Large yellow lady's-slipper, yellow lady's-slipper, yellow moccasin-flower, Venus'-shoe, Venus'-cup, yellow Indian-shoe, American valerian, nerve-root, male nervine, yellow Noah's-ark, yellows, monkey-flower, umbil-root, yellow umbil; (2) small yellow lady's-slipper.

Habitat and range.—Both of these native species frequent bogs and wet places in deep shady woods and thickets. The large yellow lady's-slipper may be found from Nova Scotia south to Alabama and west to Nebraska and Missouri. The range for the small yellow lady's-slipper extends from Newfoundland south along the mountains to Georgia, and west to Missouri, Washington, and British Columbia.

Description of plants.—The orchid family (Orchidaceæ), to which the lady's-slippers belong, boasts of many beautiful, showy, and curious species, and the lady's-slipper is no exception. There are several other plants to which the name lady's-slipper has been applied, but one glance at the peculiar structure of the flowers in the species under consideration, as shown in the illustration (Pl. III, fig. 1), will enable anyone to recognize them as soon as seen.

The particular species of lady's-slipper under consideration in this article do not differ very materially from each other. Both are perennials, growing from

1 to about 2 feet in height, with rather large leaves and with yellow flowers more or less marked with purple, the main difference being that in *hirsutum* the flower is larger and pale yellow, while in *parviflorum* the flower is small, bright yellow, and perhaps more prominently striped and spotted with purple. The stem, leaves, and inside of corolla or lip are somewhat hairy in the large yellow lady's-slipper, but not in the small yellow lady's-slipper. These hairs are said to be irritating to some people, in whom they cause an eruption of the skin.

The leaves of the lady's-slipper vary in size from 2 to 6 inches in length and from 1 to 3 inches in width, and are broadly oval or elliptic, sharp pointed, with numerous parallel veins, and sheathing at the base, somewhat hairy in the large lady's-slipper. The solitary terminal flower, which appears from May to June, is very showy and curiously formed, the lip being the most prominent part. This lip looks like an inflated bag (1 to 2 inches long in the large lady's-slipper), pale yellow or bright yellow in color, variously striped and blotched with purple. The other parts of the flower are greenish or yellowish, with purple stripes, and the petals are usually twisted.

Description of rootstock.—The rootstock is of horizontal growth, crooked, fleshy, and with numerous wavy, fibrous roots. (Pl. III, fig. 1.) As found in commerce, the rootstocks are from 1 to 4 inches in length, about an eighth of an inch in thickness, dark brown, the upper surface showing numerous round cup-shaped scars, the remains of former annual stems, and the lower surface thickly covered with wavy, wiry, and brittle roots, the latter breaking off with a short, white fracture. The odor is rather heavy and disagreeable, and the taste is described as sweetish, bitter, and somewhat pungent.

Collection, prices, and uses.—Both rootstock and roots are used, and these should be collected in autumn, freed from dirt, and carefully dried in the shade. These beautiful plants are becoming rare in many localities. Sometimes such high-priced drugs as goldenseal and senega are found mixed with the lady's-slipper, but as these are more expensive than the lady's-slipper, it is not likely that they are included with fraudulent intent, and they can be readily distinguished. The prices paid to collectors of this root range from 32 to 35 cents a pound.

The principal use of lady's-slipper, which is official in the United States Pharmacopœia, is as an antispasmodic and nerve tonic, and it has been used for the same purposes as valerian.

CRAWLEY-ROOT.

Corallorhiza odontorhiza (Willd.) Nutt.

Other common names.—Corallorhiza, crawley, coralroot, small coralroot, small-flowered coralroot, late coralroot, dragon's-claw, chickentoe, turkey-claw, feverroot.

Habitat and range.—Rich, shady woods having an abundance of leaf mold produce this curious little plant. It may be found in such situations from Maine to Florida, westward to Michigan and Missouri.

Description of plant.—This peculiar native perennial, belonging to the orchid family (Orchidaceæ), is unlike most other plants, being leafless, and instead of a green stem it has a purplish brown, sheathed scape, somewhat swollen or bulbous at the base and bearing a clustered head of purplish flowers 2 to 4 inches long. It does not grow much taller than about a foot in height. (Fig. 4.)

The flowers, 6 to 20 in a head, appear from July to September, and consist of lance-shaped sepals and petals striped with purple and a broad, whitish, oval lip, generally marked with purple and narrowed at the base. The seed capsule is large, oblong, or somewhat globular.

Description of rootstock.—The rootstock of this plant is also curious, resembling in its formation a piece of coral (fig. 4), on account of which it is known by the name "coralroot." The other common names, such as chickentoe, turkey-claw, etc., all have reference to the form of the rootstock. As found in commerce, crawley-root consists of small, dark-brown wrinkled pieces, the larger ones branched like coral. The taste at first is sweetish, becoming afterwards slightly bitter. It has a peculiar odor when fresh, but when dry it is without odor.

Collection, prices, and uses.—Crawley-root should be collected in July or August. The price ranges from 20 to 50 cents a pound. Other species of Corallorhiza are sometimes collected and are said to probably possess similar properties. This root is said to be very effective for promoting perspiration, and it is also used as a sedative and in fever.

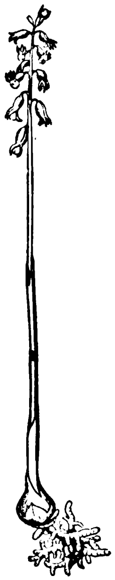

FIG. 4.—Crawley-root (*Corallorhiza odontorhiza*). After Torrey's Flora of New York.

CANADA SNAKEROOT.

Asarum canadense L.

Other common names.—Asarum, wild ginger, Indian ginger, Vermont snakeroot, heart-snakeroot, southern snakeroot, black snakeroot, colt's-foot snakeroot, black snakeweed, broad-leaved asarabacca, false colt's-foot, cat's-foot, colicroot.

Habitat and range.—This inconspicuous little plant frequents rich woods or rich soil along roadsides from Canada south to North Carolina and Kansas.

Description of plant.—Canada snakeroot is a small, apparently stemless perennial, not more than 6 to 12 inches in height, and belongs to the birthwort family (Aristolochiaceæ). It usually has but two leaves, which are borne on slender, finely hairy stems; they are kidney shaped or heart shaped, thin, dark green above and paler green on the lower surface, strongly veined, and from 4 to 7 inches broad. The solitary bell-shaped flower is of an unassuming dull brown or brownish purple, and this modest color, together with its position on the plant, renders it so inconspicuous as to escape the notice of the casual observer. It droops from a short, slender stalk produced between the two leaf stems and is almost hidden under the two leaves, growing so close to the ground that it is sometimes buried beneath old leaves, and sometimes the soil must be removed before the flower can be seen. It is bell shaped, woolly, the inside darker in color than the outside and of a satiny texture. The fruit which follows is in the form of a leathery 6-celled capsule. (Pl. III, fig. 2.)

Description of rootstock.—Canada snakeroot has a creeping, yellowish rootstock, slightly jointed, with thin rootlets produced from joints which occur about every half inch or so. (Pl. III, fig. 2.) In the drug trade the rootstock is usually found in pieces a few inches in length and about one-eighth of an inch in diameter. These are four-angled, crooked, brownish and wrinkled on the outside, whitish inside and showing a large central pith, hard and brittle, and breaking with a short fracture. The odor is fragrant and the taste spicy and aromatic, and has been said to be intermediate between ginger and serpentaria.

Collection, prices, and uses.—The aromatic root of Canada snakeroot is collected in autumn, and the price ranges from 10 to 15 cents a pound. It was reported as very scarce in the latter part of the summer of 1906. Canada snakeroot, which was official in the United States Pharmacopœia from 1820 to 1880, is used as an aromatic, diaphoretic, and carminative.

SERPENTARIA.

(1) *Aristolochia serpentaria* L. and (2) *Aristolochia reticulata* Nutt.

Pharmacopœial name.—Serpentaria.

Other common names.—(1) Virginia serpentaria, Virginia snakeroot, serpentary, snakeweed, pelican-flower, snagrel, sangrel, sangree-root; (2) Texas serpentaria, Texas snakeroot, Red River snakeroot.

Habitat and range.—Virginia serpentaria is found in rich woods from Connecticut to Michigan and southward, principally along the Alleghenies, and Texas serpentaria occurs in the Southwestern States, growing along river banks from Arkansas to Louisiana.

Description of Virginia serpentaria.—About midsummer the queerly shaped flowers of this native perennial are produced. They are very similar to those of the better known "Dutchman's-pipe," another species of this genus, which is quite extensively grown as an ornamental vine for covering porches and trellises. Virginia serpentaria and Texas serpentaria both belong to the birthwort family (Aristolochiaceæ). The Virginia serpentaria is nearly erect, the slender, wavy stem sparingly branched near the base, and usually growing to about a foot in height, sometimes, however, even reaching 3 feet. The leaves are thin, ovate, ovate lance shaped or oblong lance shaped, and usually heart shaped at the base; they are about 2½ inches long and about 1 or 1½ inches in width. The flowers are produced from near the base of the plant, similar to its near relative, the Canada snakeroot. They are solitary and terminal, borne on slender, scaly branches, dull brownish purple in color, and of a somewhat leathery texture; the calyx tube is curiously bent or contorted in the shape of the letter S. The fruit is a roundish 6-celled capsule, about half an inch in diameter, and containing numerous seeds. (Pl. III, fig. 3.)

Description of Texas serpentaria.—This species has a very wavy stem, with oval, heart-shaped, clasping leaves, which are rather thick and strongly reticulated or marked with a network of veins; hence the specific name *reticulata*. The entire plant is hairy, with numerous long, coarse hairs. The small, densely hairy purplish flowers are also produced from the base of the plant.

Description of rootstocks.—Serpentaria has a short rootstock with many thin, branching, fibrous roots. (Pl. III, fig. 3.) In the dried state it is thin and bent, the short remains of stems showing on the upper surface and the under surface having numerous thin roots about 4 inches in length, all of a dull yellowish brown color, internally white. It has a very agreeable aromatic odor, somewhat like camphor, and the taste is described as warm, bitterish, and camphoraceous.

The Texas serpentaria has a larger rootstock, with fewer roots less interlaced than the Virginia serpentaria.

Collection, prices, and uses.—The roots of serpentaria are collected in autumn. Various other roots are sometimes mixed with serpentaria, but as they are mostly high-priced drugs, such as goldenseal, pinkroot, senega, and ginseng, their presence in a lot of serpentaria is probably accidental, due simply to proximity of growth of these plants. Abscess-root (*Polemonium reptans* L.) is another root with which serpentaria is often adulterated. It is very similar to serpentaria, except that it is nearly white. The price of serpentaria ranges from 35 to 40 cents a pound.

Serpentaria is used for its stimulant, tonic, and diaphoretic properties. Both species are official in the United States Pharmacopœia.

YELLOW DOCK.

Rumex crispus L.

Other common names.—Rumex, curled dock, narrow dock, sour dock. (Fig. 5.)

Habitat and range.—This troublesome weed, introduced from Europe, is now found throughout the United States, occurring in cultivated as well as in waste ground, among rubbish heaps, and along roadsides.

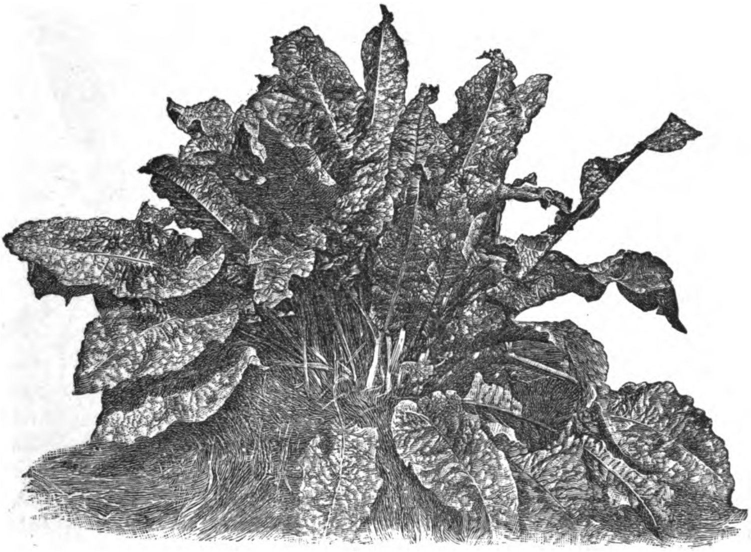

FIG. 5.—Yellow dock (*Rumex crispus*), first year's growth.

Description of plant.—Yellow dock is a perennial plant belonging to the buckwheat family (Polygonaceæ), and has a deep, spindle-shaped root, from which arises an erect, angular, and furrowed stem, attaining a height of from 2 to 4 feet. The stem is branched near the top and leafy, bearing numerous long dense clusters formed by drooping groups of inconspicuous green flowers placed in circles around the stem. The flowers are produced from June to August, and the fruits which follow are in the form of small triangular nuts, like the grain of buckwheat, to which family the dock belongs. So long as the fruits are green and immature they can scarcely be distinguished from the flowers, but as they ripen the clusters take on a rusty-brown color. The leaves of the yellow dock are lance shaped, acute, with the margins strongly waved and crisped, the lower long-stalked leaves being blunt or heart shaped at the base and from 6 to 8 inches in length, while those nearer the top are narrower and shorter, only 3 to 6 inches in length, short stemmed or stemless.

The broad-leaved dock (*Rumex obtusifolius* L.), known also as bitter dock, common dock, blunt-leaved dock, and butter-dock, is a very common weed found in waste places from the New England States to Oregon and south to Florida and Texas. It grows to about the same height as the yellow dock, to which it bears a close resemblance, differing principally in its more robust habit of growth. The stem is stouter than in yellow dock, and the leaves, which like-

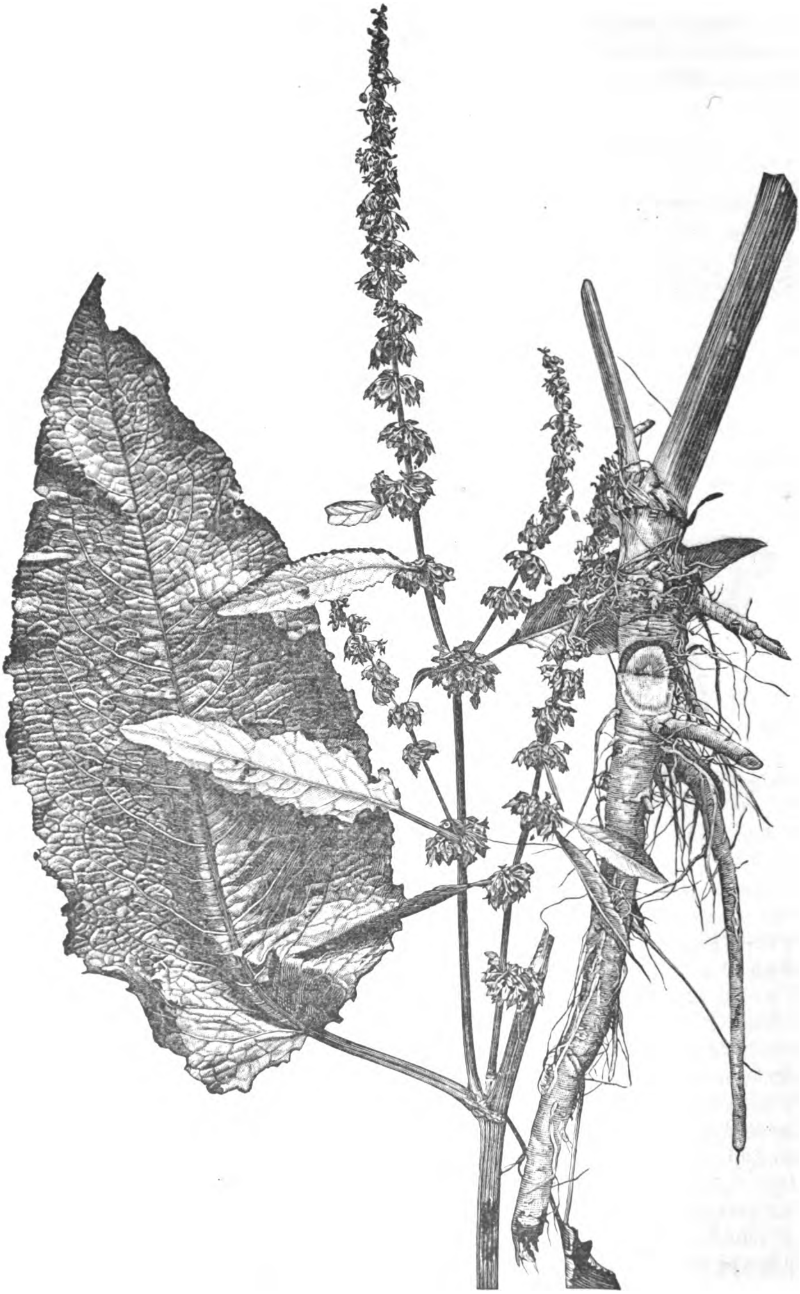

FIG. 6.—Broad-leaved dock (*Rumex obtusifolius*), leaf, fruiting spike, and root.

wise are wavy along the margin, are much broader and longer. The green flowers appear from June to August and are in rather long, open clusters, the groups rather loose and far apart. (Fig. 6.)

Description of roots.—Yellow dock root is large and fleshy, usually from 8 to 12 inches long, tapering or spindle shaped, with few or no rootlets. When dry it is usually twisted and prominently wrinkled, the rather thick, dark, reddish brown bark marked with small scars. The inside of the root is whitish at first, becoming yellowish. The fracture is short, but shows some splintery fibers. The root, as it occurs in commerce, is either entire or occasionally split lengthwise.

The darker colored root of the broad-leaved dock has a number of smaller branches near the crown and more rootlets. (Fig. 6.) Dock roots have but a very faint odor and a bitter, astringent taste.

Collection, prices, and uses.—The roots should be collected in late summer or autumn, after the fruiting tops have turned brown, then washed, either left entire or split lengthwise into halves or quarters, and carefully dried. Yellow dock root ranges from 4 to 6 cents a pound.

In the United States Pharmacopœia of 1890 " the roots of *Rumex crispus* and of some other species of Rumex " were official, and both of the above-named species are used, but the yellow dock (*Rumex crispus*) is the species most commonly employed in medicine. The docks are largely used for purifying the blood and in the treatment of skin diseases.

The young root leaves of both of the species mentioned are sometimes used in spring as pot herbs.

POKEWEED.

Phytolacca decandra L.[a]

Synonym.—*Phytolacca americana* L.[a]

Pharmacopœial name.—Phytolacca.

Other common names.—Poke, pigeon-berry, garget, scoke, pocan, coakum, Virginian poke, inkberry, red inkberry, American nightshade, cancer-jalap, redweed.

Habitat and range.—Pokeweed, a common, familiar, native weed, is found in rich, moist soil along fence rows, fields, and uncultivated land from the New England States to Minnesota south to Florida and Texas.

Description of plant.—In Europe, where pokeweed has become naturalized from this country, it is regarded as an ornamental garden plant, and, indeed, it is very showy and attractive with its reddish purple stems, rich green foliage, and clusters of white flowers and dark-purple berries.

The stout, smooth stems, arising from a very large perennial root, attain a height of from 3 to 9 feet, and are erect and branched, green at first, then reddish. If a piece of the stem is examined, the pith will be seen to be divided into disk-shaped parts with hollow spaces between them. The smooth leaves are borne on short stems and are about 5 inches long and 2 to 3 inches wide, ovate or ovate oblong, acute at the apex, and the margins entire. The long-stalked clusters of whitish flowers, which appear from July to September, are from 3 to 4 inches in length, the flowers numerous and borne on reddish stems. In about two months the berries will have matured and assumed a rich dark-purple color.

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[a] *Phytolacca americana* L. by right of priority should be accepted, but *P. decandra* L. is used in conformity with the Pharmacopœia.

These smooth and shining purple berries are globular, flattened at both ends, and contain black seeds embedded in a rich crimson juice. (Fig. 7.) This plant belongs to the pokeweed family (Phytolaccaceæ).

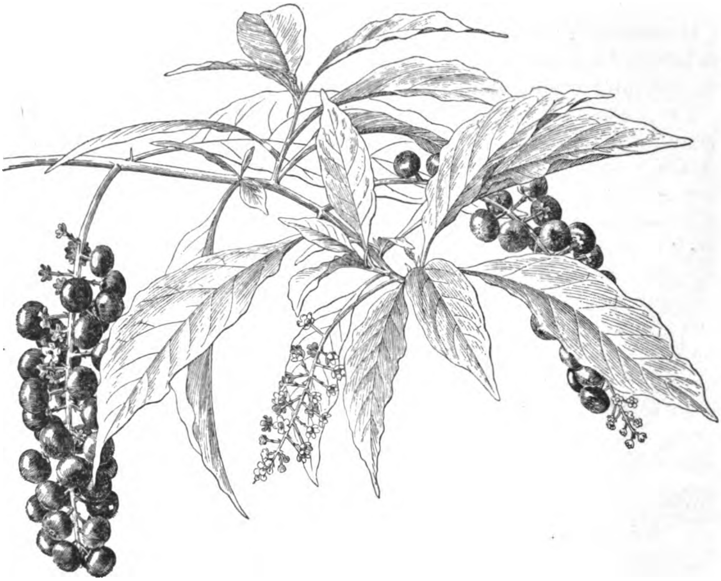

FIG. 7.—Pokeweed (*Phytolacca decandra*), flowering and fruiting branch.

Description of root.—Pokeweed has a very thick, long, fleshy root, conical in shape and branched (fig. 8), very much resembling that of horseradish, and poisonous. In commerce it usually occurs in transverse or lengthwise slices, the outside a yellowish brown and finely wrinkled lengthwise, and thickly encircled with lighter colored ridges. It breaks with a fibrous fracture and is yellowish gray within. The transverse slices show many concentric rings. There is a slight odor and the taste is sweetish and acrid. The root when powdered causes sneezing.

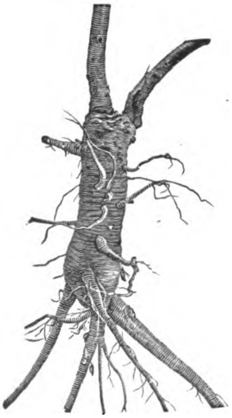

FIG. 8.—Pokeweed root.

Collection, prices, and uses.—The root of the pokeweed, which is official in the United States Pharmacopœia, is collected in the latter part of autumn, thoroughly cleaned, cut into transverse or lengthwise slices, and carefully dried. It brings from 2½ to 4 cents a pound.

The root is used for its alterative properties in treating various diseases of the skin and blood, and in certain cases in relieving pain and allaying inflammation. It also acts upon the bowels and causes vomiting.

The berries when fully matured are also used in medicine.

The young and tender shoots of the pokeweed are eaten in spring, like asparagus, but bad results may follow if they are not thoroughly cooked or if they are cut too close to the root.

SOAPWORT.

Saponaria officinalis L.

Other common names.—Saponaria, saponary, common soapwort, bouncing-bet, soaproot, bruisewort, Boston pink, chimney-pink, crow-soap, hedge-pink, old-maid's-pink, fuller's-herb, lady-by-the-gate, London-pride, latherwort, mock-gilliflower, scourwort, sheepweed, sweet-betty, wild sweet-william, woods-phlox, world's-wonder.

Habitat and range.—By one or another of its many common names this plant, naturalized from Europe, is known almost everywhere, occurring along roadsides and in waste places.

Description of plant.—Soapwort is a rather pretty herbaceous perennial, 1 to 2 feet high, and belonging to the pink family (Silenaceæ). Its smooth, stout, and erect stem is leafy and only sparingly branched, the leaves ovate, 2 to 3 inches long, smooth, prominently ribbed, and pointed at the apex. The bright-looking, crowded clusters of pink (or in shady localities whitish) flowers appear from about June until far along in September. The five petals of the corolla are furnished with long "claws," or, in other words, they are narrowly lengthened toward the base and inserted within the tubular and pale-green calyx. The seed capsule is oblong and one-celled. (Pl. III, fig. 4.)

Description of root.—Soapwort spreads by means of its stolons, or underground runners. But the roots, which are rather long, are the parts employed in medicine. These are cylindrical, tapering toward the apex, more or less branched, and wrinkled lengthwise. (Pl. III, fig. 4.) The whitish wood is covered with a brownish red, rather thick bark, and the root breaks with a short, smooth fracture. It is at first sweetish, bitter, and mucilaginous, followed by a persistently acrid taste, but it has no odor.

Collection, prices, and uses.—As already indicated, the roots, without the runners, should be collected either in spring or autumn. With water they form a lather, like soap, whence the common names soapwort, soaproot, latherwort, etc., are derived. The price ranges from 5 to 10 cents a pound. The roots are employed in medicine for their tonic, alterative, and diaphoretic properties. The leaves are also used.

GOLDENSEAL.

Hydrastis canadensis L.

Pharmacopœial name.—Hydrastis.

Other common names.—Yellowroot, yellow puccoon, orange-root, yellow Indian-paint, turmeric-root, Indian turmeric, Ohio curcuma, ground-raspberry, eye-root, eye-balm, yellow-eye, jaundice-root, Indian-dye.

Habitat and range.—This native forest plant occurs in patches in high, open woods, and usually on hillsides or bluffs affording natural drainage, from southern New York to Minnesota and western Ontario, south to Georgia and Missouri.

Goldenseal is now becoming scarce throughout its range. Ohio, Indiana, Kentucky, and West Virginia have been the greatest goldenseal-producing States.

Description of plant.—Goldenseal is a perennial plant belonging to the same family as the buttercup, namely, the crowfoot family (Ranunculaceæ). It has a thick yellow rootstock, which sends up an erect hairy stem about 1 foot in height, surrounded at the base by 2 or 3 yellowish scales. The yellow color of the roots and scales extends up the stem so far as it is covered by soil, while the portion of the stem above ground has a purplish color. The stem, which has only two leaves, seems to fork at the top, one branch bearing a large leaf and the other a smaller one and a flower. A third leaf, which is much smaller than the other two and stemless, is occasionally produced. The leaves are palmately 5 to 9 lobed, the lobes broad, acute, sharply and unequally toothed; they are prominently veined on the lower surface, and at flowering time, when they are very much wrinkled, they are only partially developed, but they continue to expand until they are from 6 to 8 inches in diameter, becoming thinner in texture and smoother. The upper leaf subtends or incloses the flower bud. The greenish white flower appears about April or May, but it is of short duration, lasting only five or six days. It is less than half an inch in diameter and, instead of petals, has three small petal-like sepals, which fall away as soon as the flower expands, leaving only the numerous stamens (as many as 40 or 50), in the center of which are about a dozen pistils, which finally develop into a round, fleshy, berry-like head which ripens in July or August. The fruit when ripe turns a bright red and resembles a large raspberry, whence the common name "ground-raspberry" is derived. It contains from 10 to 20 small, black, shining, hard seeds. (Fig. 9.)

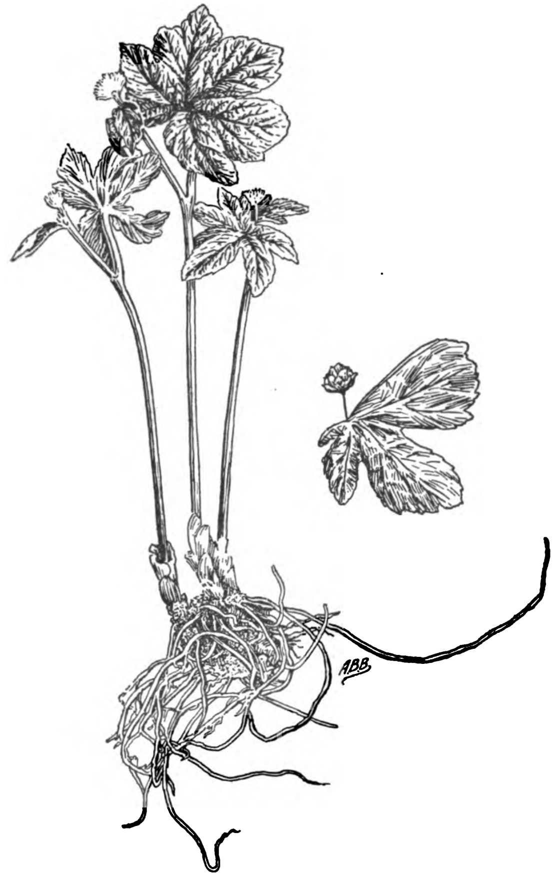

FIG. 9.—Goldenseal (*Hydrastis canadensis*), flowering plant and fruit.

Description of rootstock.—The fresh rootstock of goldenseal, which has a rank, nauseating odor, is bright yellow, both internally and externally, with fibrous yellow rootlets produced from the sides. It is from 1½ to 2½ inches in length, from one-fourth to three-fourths of an inch in thickness, and contains a large amount of yellow juice. (Fig. 10.)

In the dried state the rootstock is crooked, knotty, and wrinkled, from 1 to 2 inches in length, and from one-eighth to one-third of an inch in diameter. It is of a dull-brown color on the outside and breaks with a clean, short, resinous fracture, showing a lemon-yellow color inside. After the rootstock has been kept for some time it will become greenish yellow or brown internally and its quality impaired. The cup-like depressions or stem scars on the upper surface of the rootstock resemble the imprint of a seal, whence the most popular name of the plant, goldenseal, is derived. The rootstock as found in commerce is almost bare, the fibrous rootlets, which in drying become very wiry and brittle, breaking off readily and leaving only small protuberances.

The odor of the dried rootstock, while not so pronounced as in the fresh material, is peculiar, narcotic, and disagreeable. The taste is exceedingly bitter, and when the rootstock is chewed there is a persistent acridity, which causes an abundant flow of saliva.

Collection, prices, and uses.—The root should be collected in autumn after the seeds have ripened, freed from soil, and carefully dried. After a dry season goldenseal dies down soon after the fruit is mature, so that it often happens that by the end of September not a trace of the plant remains above ground; but if the season has been moist, the plant sometimes persists to the beginning of winter. The price of goldenseal ranges from $1 to $1.50 a pound.

Goldenseal, which is official in the United States Pharmacopœia, is a useful drug in digestive disorders and in certain catarrhal affections of the mucous membranes, in the latter instance being administered both internally and locally.

Cultivation.—Once so abundant in certain parts of the country, especially in the Ohio Valley, goldenseal is now becoming scarce throughout its range, and in consequence of the increased demand for the root, both at home and abroad, its cultivation must sooner or later be more generally undertaken in order to satisfy the needs of medicine. In some parts of the country the cultivation of goldenseal is already under way.

The first thing to be considered in growing this plant is to furnish it, as nearly as possible, the conditions to which it has been accustomed in its native forest home. This calls for a well-drained soil, rich in humus, and partially shaded. Goldenseal stands transplanting well, and the easiest way to propagate it is to bring the plants in from the forest and transplant them to a properly prepared location, or to collect the rootstocks and to cut them into as many pieces as there are buds, planting these pieces in a deep, loose, well-prepared soil, and mulching, adding new mulch each year to renew the humus. With such a soil the cultivation of goldenseal is simple, and it will be necessary chiefly to keep down the weeds.

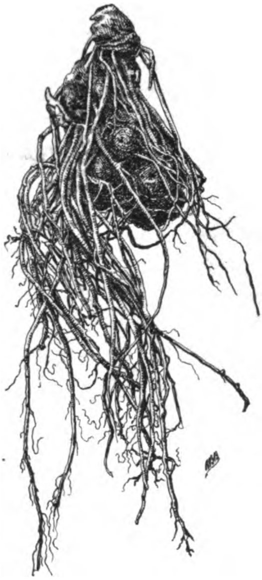

FIG. 10.—Goldenseal rootstock.

The plants may be grown in rows 1 foot apart and 6 inches apart in the row, or they may be grown in beds 4 to 8 feet wide, with walks between. Artificial shade will be necessary, and this is supplied by the erection of lath sheds. The time required to obtain a marketable crop is from two to three years.

Detailed information regarding the experiments made by the Department will be found in another publication.[a]

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[a] Bulletin 51, Part VI, Bureau of Plant Industry, "Goldenseal."

GOLDTHREAD.

Coptis trifolia (L.) Salisb.

Other common names.—Coptis, cankerroot, mouthroot, yellowroot.

Habitat and range.—This pretty little perennial is native in damp, mossy woods and bogs from Canada and Alaska south to Maryland and Minnesota. It is most common in the New England States, northern New York and Michigan, and in Canada, where it frequents the dark sphagnum swamps, cold bogs, and the shade of dense forests of cedars, pines, and other evergreens.

Description of plant.—Anyone familiar with this attractive little plant will agree that it is well named. The roots of goldthread, running not far beneath the surface of the ground, are indeed like so many tangled threads of gold. The plant in the general appearance of its leaves and flowers very closely resembles the strawberry plant. It is of low growth, only 3 to 6 inches in height, and belongs to the crowfoot family (Ranunculaceæ). The leaves are all basal, and are borne on long, slender stems; they are evergreen, dark green and shining on the upper surface and lighter green beneath, divided into three parts, which are prominently veined and toothed. A single small, white, star-shaped flower is borne at the ends of the flowering stalks, appearing from May to August. (Fig. 11.) The 5 to 7 sepals or lobes of the calyx are white and like petals, and the petals of the corolla, 5 to 7 in number, are smaller, club shaped, and yellow at the base. The seed pods are stalked, oblong, compressed, spreading, tipped with the persistent style, and containing small black seeds.

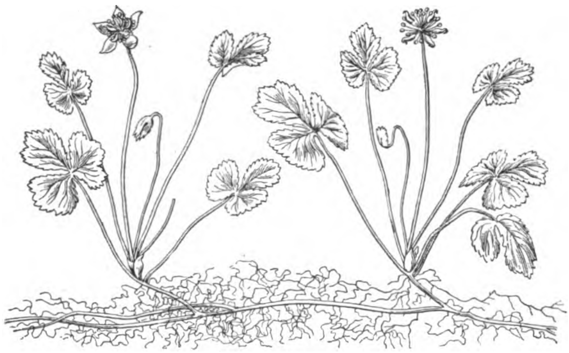

FIG. 11.—Goldthread (*Coptis trifolia*). After Lloyd's Drugs and Medicines of North America.

Description of root.—Goldthread has a long, slender, creeping root, which is much branched and frequently matted. (Fig. 11.) The color of these roots is a bright golden yellow. As found in the stores, goldthread consists usually of tangled masses of these golden-yellow roots, mixed with the leaves and stems of the plant, but the root is the part prescribed for use. The root is bitter and has no odor.

Collection, prices, and uses.—The time for collecting goldthread is in autumn. After removing the covering of dead leaves and moss, the creeping yellow roots of goldthread will be seen very close to the surface of the ground, from which they can be very easily pulled. They should, of course, be carefully dried. As already stated, although the roots and rootlets are the parts to be used, the commercial article is freely mixed with the leaves and stems of the plant. Evidences of the pine-woods home of this plant, in the form of pine needles and bits of moss, are often seen in the goldthread received for market. Goldthread brings from 60 to 70 cents a pound.

The Indians and early white settlers used this little root as a remedy for various forms of ulcerated and sore mouth, and it is still used as a wash or gargle for affections of this sort. It is also employed as a bitter tonic.

Goldthread was official in the United States Pharmacopœia from 1820 to 1880.

BLACK COHOSH.

Cimicifuga racemosa (L.) Nutt.

Synonym.—Actaea racemosa L.

Pharmacopœial name.—Cimicifuga.

Other common names.—Black snakeroot, bugbane, bugwort, rattle-snakeroot, rattleroot, rattleweed, rattletop, richweed, squawroot.

Habitat and range.—Although preferring the shade of rich woods, black cohosh will grow occasionally in sunny situations in fence corners and woodland pastures. It is most abundant in the Ohio Valley, but it occurs from Maine to Wisconsin, south along the Allegheny Mountains to Georgia, and westward to Missouri.

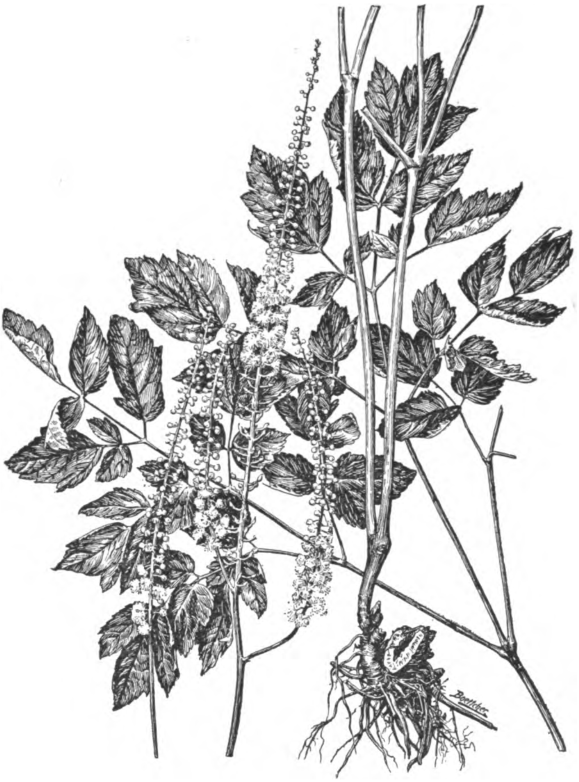

FIG. 12.—Black cohosh (*Cimicifuga racemosa*), leaves, flowering spikes, and rootstock.

Description of plant.—Rising to a height of 3 to 8 feet, the showy, delicate-flowered spikes of the black cohosh tower above most of the other woodland flowers, making it a conspicuous plant in the woods and one that can be easily recognized.

Black cohosh is an indigenous perennial plant belonging to the same family as the goldenseal, namely, the crowfoot family (Ranunculaceæ). The tall stem, sometimes 8 feet in height, is rather slender and leafy, the leaves consisting of three leaflets, which are again divided into threes. The leaflets are about 2 inches long, ovate, sharp pointed at the apex, thin and smooth, variously lobed, and the margins sharply toothed. The graceful, spikelike terminal cluster of flowers, which is produced from June to August, is from 6 inches to 2 feet in length. (Fig. 12.) Attractive as these flower clusters are to the eye, they generally do not prove attractive very long to those who may gather them for their beauty, since the flowers emit an offensive odor, which accounts for some of the common names applied to this plant, namely, bugbane and bugwort, it having been thought that this odor was efficacious in driving away bugs. The flowers do not all open at one time, and thus there may be seen buds, blossoms, and seed pods on one spike. The buds are white and globular, and as they expand in flower there is practically nothing to the flower but very numerous white stamens and the pistil, but the stamens spread out around the pistil in such a manner as to give to the spike a somewhat feathery or fluffy appearance which is very attractive. The seed pods are dry, thick and leathery, ribbed, and about one-fourth of an inch long, with a small beak at the end. The smooth brown seeds are inclosed within the pods in two rows. Anyone going through the woods in winter may find the seed pods, full of seeds, still clinging to the dry, dead stalk, and the rattling of the seeds in the pods as the wind passes over them has given rise to the common names rattle-snakeroot (not "rattlesnake"-root), rattleweed, rattletop, and rattleroot.

Description of rootstock.—The rootstock (fig. 12) is large, horizontal, and knotty or rough and irregular in appearance. The upper surface of the rootstock is covered with numerous round scars and stumps, the remains of former leaf stems, and on the fresh rootstocks may be seen the young, pinkish white buds which are to furnish the next season's growth. From the lower part of the rootstock long, fleshy roots are produced. The fresh rootstock is very dark reddish brown on the outside, white within, showing a large central pith from which radiate rays of a woody texture, and on breaking the larger roots also the woody rays will be seen in the form of a cross. On drying, the rootstock becomes hard and turns much darker, both internally and externally, but the peculiar cross formation of the woody rays in both rootstock and roots, being lighter in color, is plainly seen without the aid of a magnifying glass. The roots in drying become wiry and brittle and break off very readily. Black cohosh has a heavy odor and a bitter, acrid taste.

Collection, prices, and uses.—The root should be collected after the fruit has ripened, usually in September. The price ranges from 2 to 3 cents a pound.

The Indians had long regarded black cohosh as a valuable medicinal plant, not only for the treatment of snake bites, but it was also a very popular remedy among their women, and it is to-day considered of value as an alterative, emmenagogue, and sedative, and is recognized as official in the United States Pharmacopœia.

OREGON GRAPE.

Berberis aquifolium Pursh.

Pharmacopœial name.—Berberis.

Other common names.—Rocky Mountain grape, holly-leaved barberry, California barberry, trailing Mahonia.

Habitat and range.—This shrub is native in woods in rich soil among rocks from Colorado to the Pacific Ocean, but it is especially abundant in Oregon and northern California.

Description of plant.—Oregon grape is a low-growing shrub, resembling somewhat the familiar Christmas holly of the Eastern States, and, in fact, was first designated as "mountain-holly" by members of the Lewis and Clark expedition on their way through the western country. It belongs to the barberry family (Berberidaceæ), and grows about 2 to 6 feet in height, the branches sometimes trailing. The leaves consist of from 5 to 9 leaflets, borne in pairs, with an odd leaflet at the summit. They are from 2 to 3 inches long and about 1 inch wide, evergreen, thick, leathery, oblong or oblong ovate in outline, smooth and shining above, the margins provided with thorny spines or teeth. The numerous small yellow flowers appear in April or May and are borne in erect, clustered heads. The fruit consists of a cluster of blue or bluish purple berries, having a pleasant taste, and each containing from three to nine seeds. (Pl. IV, fig. 1.)

Other species.—While *Berberis aquifolium* is generally designated as the source of Oregon grape root, other species of Berberis are met with in the market under the name grape root, and their use is sanctioned by the United States Pharmacopœia.

The species most commonly collected with *Berberis aquifolium* is *B. nervosa* Pursh, which is also found in woods from California northward to Oregon and Washington. This is 9 to 16 inches in height, with a conspicuously jointed stem and 11 to 17 bright-green leaflets.

Another species of Berberis, *B. pinnata* Lag., attains a height of from a few inches to 5 feet, with from 5 to 9, but sometimes more, leaflets, which are shining above and paler beneath. This resembles *aquifolium* very closely and is often mistaken for it, but it is said that it has not been used by the medical profession, unless in local practice.[a] The root also is about the same size as that of *aquifolium*, while the root of *nervosa* is smaller.

Some works speak of *Berberis repens* Lindl. as another species often collected with *aquifolium*, but in the latest botanical manuals no such species is recognized, *B. repens* being given simply as a synonym for *B. aquifolium*.

Description of rootstock.—The rootstock and roots of Oregon grape are more or less knotty, in irregular pieces of varying lengths, and about an inch or less in diameter, with brownish bark and hard and tough yellow wood, showing a small pith and narrow rays. Oregon grape root has a very bitter taste and very slight odor.

Collection, prices, and uses.—Oregon grape root is collected in autumn and brings from 10 to 12 cents a pound. The bark should *not* be removed from the rootstocks, as the Pharmacopœia directs that such roots be rejected.

This root has long been used in domestic practice throughout the West as a tonic and blood purifier, and is now official in the United States Pharmacopœia. The berries are used in making preserves and cooling drinks.

BLUE COHOSH.

Caulophyllum thalictroides (L.) Michx.

Other common names.—Caulophyllum, pappoose-root, squawroot, blueberry-root, blue ginseng, yellow ginseng. (Pl. IV, fig. 2.)

Habitat and range.—Blue cohosh is found in the deep rich loam of shady woods from New Brunswick to South Carolina, westward to Nebraska, being abundant especially throughout the Allegheny Mountain region.

Description of plant.—This member of the barberry family (Berberidaceæ) is a perennial herb, 1 to 3 feet in height, and indigenous to this country. It bears at the top one large, almost stemless leaf, which is triternately compound—that is, the main leaf stem divides into three stems, which again divide into threes, and each division bears three leaflets. Sometimes there is a smaller leaf, but similar to the other, at the base of the flowering branch. The leaflets are thin in texture, oval, oblong, or obovate, and 3 to 5 lobed.

In the early stage of its growth this plant is covered with a sort of bluish green bloom, but it gradually loses this and becomes smooth. The flowers are borne in a small terminal panicle or head, and are small and greenish yellow. They appear from April to May, while the leaf is still small. The globular seeds, which ripen about August, are borne on stout stalks in membranous capsules and resemble dark-blue berries.

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[a] King's American Dispensatory, Vol. I, 1898, from Berberidaceæ, by C. G. and J. U. Lloyd, 1878.

Description of rootstock.—The thick crooked rootstock of blue cohosh is almost concealed by the mass of matted roots which surrounds it. There are numerous cup-shaped scars and small branches on the upper surface of the rootstock, while the lower surface gives off numerous long, crooked, matted roots. Some of the scars are depressed below the surface of the rootstock, while others are raised above it. The outside is brownish and the inside tough and woody. Blue cohosh possesses a slight odor and a sweetish, somewhat bitter and acrid taste. In the powdered state it causes sneezing.

Collection, prices, and uses.—The root is dug in the fall. Very often the roots of goldenseal or twinleaf are found mixed with those of blue cohosh. The price of blue cohosh root ranges from 2½ to 4 cents a pound.

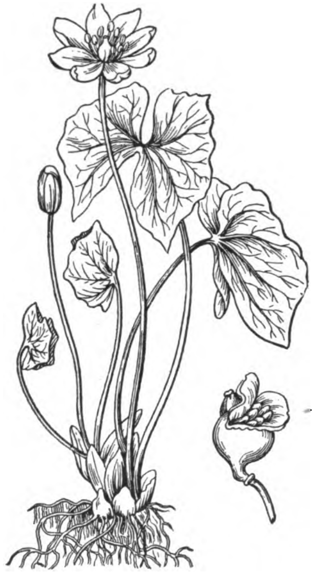

FIG. 13.—Twinleaf (*Jeffersonia diphylla*), plant and seed capsule. (After Britton and Brown, Illustrated Flora.)

Blue cohosh, official in the United States Pharmacopœia for 1890, is used as a demulcent, antispasmodic, emmenagogue, and diuretic.

TWINLEAF.

Jeffersonia diphylla (L.) Pers.

Other common names.—Jeffersonia, rheumatism-root, helmetpod, ground-squirrel pea, yellowroot.

Habitat and range.—Twinleaf inhabits rich shady woods from New York to Virginia and westward to Wisconsin.

Description of plant.—This native herbaceous perennial is only about 6 to 8 inches in height when in flower. At the fruiting stage it is frequently 18 inches in height. It is one of our early spring plants, and its white flower, resembling that of bloodroot, is produced as early as April.

The long-stemmed, smooth leaves, produced in pairs and arising from the base of the plant, are rather oddly formed. They are about 3 to 6 inches long, 2 to 4 inches wide, heart shaped or kidney shaped, but parted lengthwise into two lobes or divisions, really giving the appearance of two leaves; hence the common name "twinleaf." The flower with its eight oblong, spreading white petals measures about 1 inch across, and is borne at the summit of a slender stalk arising from the root. The many-seeded capsule is about 1 inch long, leathery, somewhat pear shaped, and opening halfway around near the top, the upper part forming a sort of lid. (Fig. 13.) Twinleaf belongs to the barberry family (Berberidaceæ).

Description of rootstock.—Twinleaf has a horizontal rootstock, with many fibrous, much-matted roots, and is very similar to that of blue cohosh, but not so long. It is thick, knotty, yellowish brown externally, with a resinous bark, and internally yellowish. The inner portion is nearly tasteless, but the bark has a bitter and acrid taste.

Collection, prices, and uses.—The rootstock is collected in autumn, and is used as a diuretic, alterative, antispasmodic, and a stimulating diaphoretic. Large doses are said to be emetic and smaller doses tonic and expectorant. The price paid for twinleaf root ranges from about 5 to 7 cents a pound.

MAY-APPLE.

Podophyllum peltatum L.

Pharmacopœial name.—Podophyllum.

Other common names.—Mandrake, wild mandrake, American mandrake, wild lemon, ground-lemon, hog-apple, devil's-apple, Indian apple, raccoon-berry, duck's-foot, umbrella-plant, vegetable calomel.

Habitat and range.—The May-apple is an indigenous plant, found in low woods, usually growing in patches, from western Quebec to Minnesota, south to Florida and Texas.

Description of plant.—A patch of May-apple can be distinguished from afar, the smooth, dark-green foliage and close and even stand making it a conspicuous feature of the woodland vegetation.

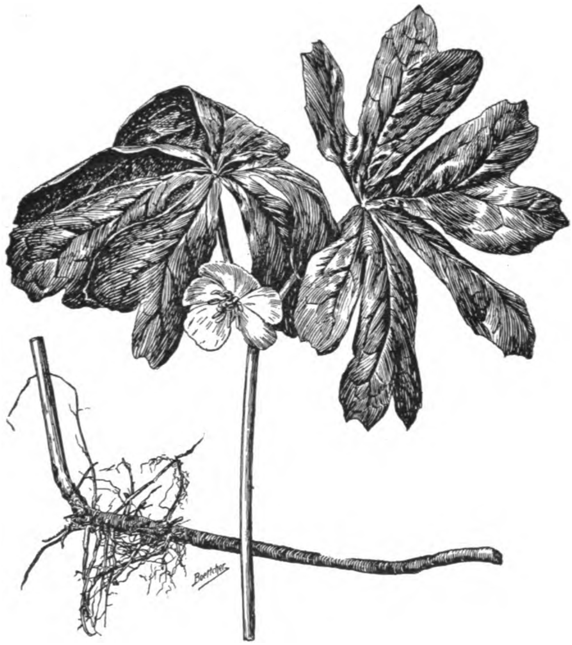

FIG. 14.—May-apple (*Podophyllum peltatum*), upper portion of plant with flower, and rootstock.

May-apple is a perennial plant, and belongs to the barberry family (Berberidaceæ). It is erect, and grows about 1 foot in height. The leaves are only two in number, circular in outline, but with five to seven deep lobes, the lobes 2 cleft, and toothed at the apex; they are dark green above, the lower surface lighter green and somewhat hairy or smooth, sometimes 1 foot in diameter, and borne on long leafstalks which are fixed to the center of the leaf, giving it an umbrella-like appearance. The waxy-white, solitary flower, sometimes 2 inches in diameter, appears in May, nodding on its short stout stalk, generally right between the two large umbrella-like leaves, which shade it and hide it from view. (Fig. 14.) The fruit which follows is lemon shaped, at first green, then yellow, about 2 inches in length, and edible, although when eaten immoderately it is known to have produced bad effects.

In a patch of May-apple plants there are always a number of sterile or flowerless stalks, which bear leaves similar to those of the flowering plants.

Description of rootstock.—The horizontally creeping rootstock of May-apple (fig. 14), when taken from the ground, is from 1 to 6 feet or more in length, flexible, smooth, and round, dark brown on the outside and whitish and fleshy within; at intervals of a few inches are thickened joints, on the upper surface of which are round stem scars and on the lower side a tuft of rather stout roots. Sometimes the rootstock bears lateral branches. The dried rootstock, as it occurs in the stores, is in irregular, somewhat cylindrical pieces, smooth or somewhat wrinkled, yellowish brown or dark brown externally, whitish to pale brown internally, breaking with a short, sharp fracture. the surface of which is mealy. The odor is slight and the taste at first sweetish, becoming very bitter and acrid.

Collection, prices, and uses.—The proper time for collecting the rootstock is in the latter half of September or in October. The price paid for May-apple root ranges from 3 to 6 cents a pound.

May-apple root, which is recognized as official in the United States Pharmacopœia, is an active cathartic, and was known as such to the Indians.

CANADA MOONSEED.

Menispermum canadense L.

Other common names.—Menispermum, yellow parilla, Texas sarsaparilla, yellow sarsaparilla, vine-maple. (Pl. IV, fig. 3.)

Habitat and range.—Canada moonseed is usually found along streams in woods, climbing over bushes, its range extending from Canada to Georgia and Arkansas.

Description of plant.—This native perennial woody climber reaches a length of from 6 to 12 feet, the round, rather slender stem bearing very broad, slender-stalked leaves. These leaves are from 4 to 8 inches wide, smooth and green on the upper surface and paler beneath, roundish in outline and entire, or sometimes lobed and resembling the leaves of some of our maples, whence the common name "vine-maple" is probably derived. The bases of the leaves are generally heart shaped and the apex pointed or blunt. In July the loose clusters of small yellowish or greenish white flowers are produced, followed in September by bunches of black one-seeded fruit, covered with a "bloom" and very much resembling grapes. Canada moonseed belongs to the moonseed family (Menispermaceæ).

Description of rootstock.—The rootstock and roots are employed in medicine. In the stores it will be found in long, straight pieces, sometimes 3 feet in length, only about one-fourth of an inch in thickness, yellowish brown or grayish brown, finely wrinkled lengthwise, and giving off fine, hairlike, branched, brownish roots from joints which occur every inch or so. The inside shows a distinct white pith of variable thickness and a yellowish white wood with broad, porous wood rays, the whole breaking with a tough, woody fracture. It has practically no odor, but a bitter taste.

Collection, prices, and uses.—Canada moonseed is collected in autumn, and brings from 4 to 8 cents a pound. It is used as a tonic, alterative, and diuretic, and was official in the United States Pharmacopœia for 1890.

BLOODROOT.

Sanguinaria canadensis L.

Pharmacopœial name.—Sanguinaria.

Other common names.—Redroot, red puccoon, red Indian-paint, puccoon-root, coonroot, white puccoon, pauson, snakebite, sweet-slumber, tetterwort, turmeric.

Habitat and range.—Bloodroot is found in rich, open woods from Canada south to Florida and west to Arkansas and Nebraska.

Description of plant.—This indigenous plant is among the earliest of our spring flowers, the waxy-white blossom, enfolded by the grayish green leaf, usually making its appearance early in April. The stem and root contain a blood-red juice. Bloodroot is a perennial, and belongs to the same family as the opium poppy, the Papaveraceæ. Each bud on the thick, horizontal rootstock produces but a single leaf and a flowering scape, reaching about 6 inches in height (fig. 15). The plant is smooth, and both stem and leaves, especially when young, present a grayish green appearance, being covered with a "bloom" such as is found on some fruits. The leaves are palmately 5 to 9 lobed, the lobes either cleft at the apex or having a wavy margin, and are borne on leaf stems about 6 to 14 inches long. After the plants have ceased flowering the leaves, at first only 3 inches long and 4 to 5 inches broad, continue to expand until they are about 4 to 7 inches long and 6 to 12 inches broad. The under side of the leaf is paler than the upper side and shows prominent veins. The flower measures about 1 inch across, is white, rather waxlike in appearance, with numerous golden-yellow stamens in the center. The petals soon fall off, and the oblong, narrow seed pod develops, attaining a length of about an inch.

Description of rootstock.—When dug out of the ground bloodroot is rather thick, round, and fleshy, slightly curved at the ends, and contains a quantity of blood-red juice. It is from 1 to 4 inches in length, from ½ to 1 inch in thickness, externally reddish brown, internally a bright-red blood color, and produces many thick, orange-colored rootlets. (Fig. 15.)

The rootstock shrinks considerably in drying, the outside turning dark brown and the inside orange-red or yellowish with numerous small red dots, and it breaks with a short, sharp fracture. It has but a slight odor, and the taste is bitter and acrid and very persistent. The powdered root causes sneezing.

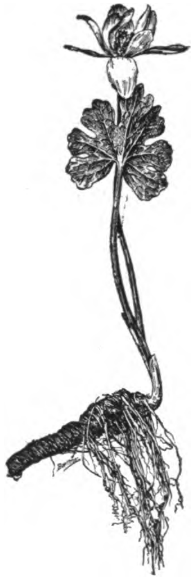

FIG. 15.—Bloodroot (*Sanguinaria canadensis*), flowering plant with rootstock.

Collection, prices, and uses.—The rootstock should be collected in autumn, after the leaves have died, and after curing it should be stored in a dry place, as it rapidly deteriorates if allowed to become moist. Age also impairs its activity. The price paid to collectors for this root ranges from about 5 to 10 cents a pound.

Bloodroot was well known to the American Indians, who used the red juice as a dye for skins and baskets and for painting their faces and bodies. It is official in the United States Pharmacopœia, and is used as a tonic, alterative, stimulant, and emetic.

HYDRANGEA.

Hydrangea arborescens L.

Other common names.—Wild hydrangea, seven-barks.

Habitat and range.—Hydrangea frequents rocky river banks and ravines from the southern part of New York to Florida, and westward to Iowa and Missouri, being especially abundant in the valley of the Delaware and southward.

Description of plant.—Hydrangea is an indigenous shrub, 5 to 6 feet or more in height, with weak twigs, slender leaf stems and thin leaves. It belongs to the hydrangea family (Hydrangeaceæ). The leaves are oval or sometimes heart shaped, 3 to 6 inches long, sharply toothed, green on both sides, the upper smooth and the lower sometimes hairy. The shrub is in flower from June to July, producing loose, branching, terminal heads of small, greenish white flowers, followed by membranous, usually 2-celled capsules, which contain numerous seeds. (Pl. IV, fig. 4.) Sometimes hydrangea will flower a second time, early in fall.

A peculiar characteristic of this shrub, and one that has given rise to the common name "seven-barks," is the peeling off of the stem bark, which comes off in several successive layers of thin, different colored bark.

Description of root.—The root is roughly branched and when first taken from the ground is very juicy, but after drying it becomes hard. The smooth white and tough wood is covered with a thin, pale-yellow or light-brown bark, which readily scales off. The wood is tasteless, but the bark has a pleasant aromatic taste, becoming somewhat pungent.

Collection, prices, and uses.—Hydrangea root is collected in autumn, and as it becomes very tough after drying and difficult to bruise it is best to cut the root in short transverse pieces while it is fresh and still juicy and dry it in this way. The price ranges from 2 to 7 cents a pound.

Hydrangea has diuretic properties and is said to have been much used by the Cherokees and early settlers in calculous complaints.

INDIAN-PHYSIC.

Porteranthus trifoliatus (L.) Britton.

Synonym.—*Gillenia trifoliata* Moench.

Other common names.—Gillenia, bowman's-root, false ipecac, western dropwort, Indian-hippo.

Habitat and range.—Indian-physic is native in rich woods from New York to Michigan, south to Georgia and Missouri.

Description of plant.—The reddish stems of this slender, graceful perennial of the rose family (Rosaceæ) are about 2 to 3 feet high, several erect and branched stems being produced from the same root. The leaves are almost stemless and trifoliate; that is, composed of three leaflets. They are ovate or lanceolate, 2 to 3 inches long, narrowed at the base, smooth, and toothed. The nodding, white or pinkish flowers are few, produced in loose terminal clusters from May to July. (Pl. V, fig. 1.) The five petals are long, narrowed or tapering toward the base, white or pinkish, and inserted in the tubular, somewhat bell-shaped, red-tinged calyx. The seed pods are slightly hairy.

At the base of the leaf stems are small leaflike parts, called stipules, which in this species are very small, linear, and entire. In the following species, which is very similar to *trifoliatus* and collected with it, the stipules, however, are so much larger that they form a prominent character, which has given rise to its specific name, *stipulatus*.

Porteranthus stipulatus (Muhl.) Britton (Syn. *Gillenia stipulacea* Nutt.) is found in similar situations as *P. trifoliatus*, but generally farther west, its range extending from western New York to Indiana and Kansas, south to Alabama, Louisiana, and Indian Territory. The general appearance of this plant is very similar to that of *P. trifoliatus*. It grows to about the same height, but is generally more hairy, the leaflets narrower and more deeply toothed, and the flowers perhaps a trifle smaller. The stipules, however, will generally serve to distinguish it. These are large, broad, ovate, acute at the apex, sharply and deeply notched, and so much like leaves that but for their position at the base of the leaf stems they might easily be mistaken for them.

With the exception of the name American ipecac applied to this plant, the common names of *Porteranthus trifoliatus* are also used for *P. stipulatus*. The roots of both species are collected and used for the same purposes.

Description of roots.—The root of *Porteranthus trifoliatus* is thick and knotty, with many smoothish, reddish brown rootlets (Pl. V, fig. 1), the latter in drying becoming wrinkled lengthwise and showing a few transverse fissures or breaks in the bark, and the interior white and woody. There is practically no odor, and the woody portion is tasteless, but the bark, which is readily separable, is bitter, increasing the flow of saliva.

Porteranthus stipulatus has a larger, more knotty root, with rootlets that are more wavy, constricted, or marked with numerous transverse rings, and the bark fissured or breaking from the white woody portion at frequent intervals.

Collection, prices, and uses.—The roots of both species are collected in autumn. The price ranges from 2 to 4 cents a pound.

Indian-physic or bowman's root, as these names imply, was a popular remedy with the Indians, who used it as an emetic. From them the white settlers learned of its properties, and it is still used for its emetic action. This drug was at one time official in the United States Pharmacopœia, from 1820 to 1880. Its action is said to resemble that of ipecac.

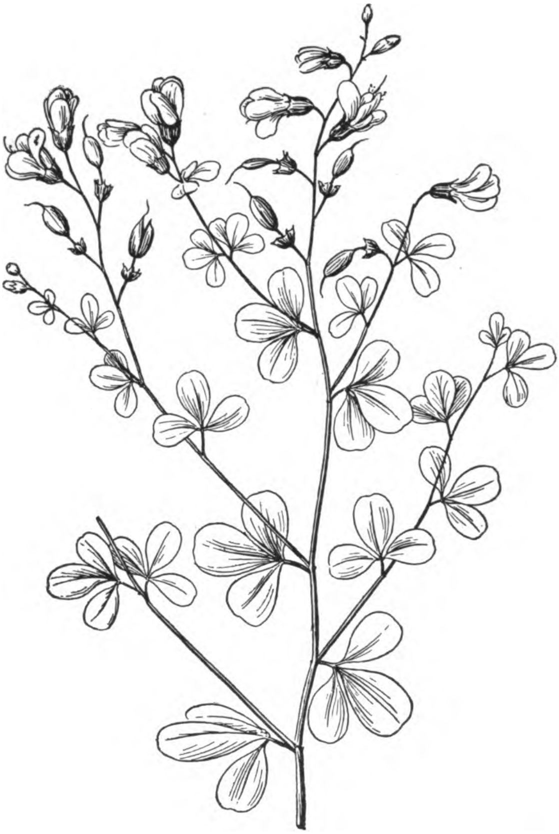

FIG. 16.—Wild indigo (*Baptisia tinctoria*), branch showing flowers and seed pods. (Modified from Barton's Vegetable Materia Medica.)

WILD INDIGO.

Baptisia tinctoria (L.) R. Br.

Other common names.—Baptisia, indigo-weed, yellow indigo, American indigo, yellow broom, indigo-broom, clover-broom, broom-clover, horsefly-weed, shoofly, rattlebush.

Habitat and range.—This native herb grows on dry, poor land, and is found from Maine to Minnesota, south to Florida and Louisiana.

Description of plant.—Many who have been brought up in the country will recognize in the wild indigo the plant so frequently used by farmers, especially in Virginia and Maryland, to keep flies away from horses, bunches of it being fastened to the harness for this purpose.

Wild indigo grows about 2 to 3 feet in height, and the cloverlike blossoms and leaves will show at once that it belongs to the same family as the common clover, namely, the pea family (Fabaceæ). It is an erect, much-branched, very leafy plant, of compact growth, the 3-leaved, bluish green foliage somewhat resembling clover leaves. The flowers, as already stated, are like common clover flowers—that is, not like clover heads, but the single flowers composing these; they are bright yellow, about one-half inch in length, and are produced in numerous clusters which appear from June to September. The seed pods, on stalks longer than the calyx, are nearly globular or ovoid and are tipped with an awl-shaped style. (Fig. 16.)

Another species, said to possess properties similar to those of *Baptisia tinctoria*, and substituted for it, is *B. alba* R. Br., called the white wild indigo. This plant has white flowers and is found in the Southern States and on the plains of the Western States.

Description of root.—Wild indigo has a thick, knotty crown or head, with several stem scars, and a round, fleshy root, sending out cylindrical branches and rootlets almost 2 feet in length. The white woody interior is covered with a thick, dark-brown bark, rather scaly or dotted with small, wartlike excrescences. The root breaks with a tough, fibrous fracture. There is a scarcely perceptible odor, and the taste, which resides chiefly in the bark, is nauseous, bitter, and acrid.

Collection, prices, and uses.—The root of wild indigo is collected in autumn, and brings from 4 to 8 cents a pound.

Large doses of wild indigo are emetic and cathartic and may prove dangerous. It also has stimulant, astringent, and antiseptic properties, and is used as a local application to sores, ulcers, etc.

The herb is sometimes employed like the root, and the entire plant was official from 1830 to 1840.

In some sections the young tender shoots are used for greens, like those of the pokeweed, but great care must be exercised to gather them before they are too far advanced in growth, as otherwise bad results will follow.

A blue coloring matter has been prepared from the plant and used as a substitute for indigo, to which, however, it is very much inferior.

CRANE'S-BILL.

Geranium maculatum L.

Pharmacopœial name.—Geranium.

Other common names.—Spotted crane's-bill, wild crane's-bill, stork's-bill, spotted geranium, wild geranium, alumroot, alumbloom, chocolate-flower, crowfoot, dovefoot, old-maid's-nightcap, shameface.

Habitat and range.—Crane's-bill flourishes in low grounds and open woods from Newfoundland to Manitoba, south to Georgia and Missouri.

Description of plant.—This pretty perennial plant belongs to the geranium family (Geraniaceæ), and will grow sometimes to a height of 2 feet, but more generally it is only about a foot in height. The entire plant is more or less covered with hairs, and is erect and usually unbranched. The leaves are nearly circular or somewhat heart shaped in outline, 3 to 6 inches wide, deeply parted into three or five parts, each division again cleft and toothed. The basal leaves are borne on long stems, while those above have shorter stems. The flowers, which appear from April to June, are borne in a loose cluster; they are rose purple, pale or violet purple in color, about 1 inch or 1½ inches wide, the petals delicately veined and woolly at the base, and the sepals or calyx lobes with a bristle-shaped point, soft-hairy, the margins having a fringe of more bristly hairs. The fruit consists of a beaked capsule, springing open elastically, and dividing into five cells, each cell containing one seed. (Fig. 17.)

Description of rootstock.—When removed from the earth, the rootstock of crane's-bill (fig. 17) is about 2 to 4 inches long, thick, with numerous branches bearing the young buds for next season's growth, and scars showing the remains of stems of previous years, brown outside, white and fleshy internally, and with several stout roots. When dry, the rootstock turns a darker brown, is finely wrinkled externally, and has a rough, spiny appearance, caused by the shrinking of the buds and branches and the numerous stem scars with which the root is studded. Internally it is of a somewhat purplish color. Crane's-bill root is without odor and the taste is very astringent.

Collection, prices, and uses.—Crane's-bill root depends for its medicinal value on its astringent properties, and as its astringency is due to the tannin content, the root should, of course, be collected at that season of the year when it is richest in that constituent. Experiments have proved that the yield of tannin in crane's-bill is greatest just before flowering, which is in April or May, according to locality. It should, therefore, be collected just before the flowering period, and not, as is commonly the case, in autumn. The price of this root ranges from 4 to 8 cents a pound.

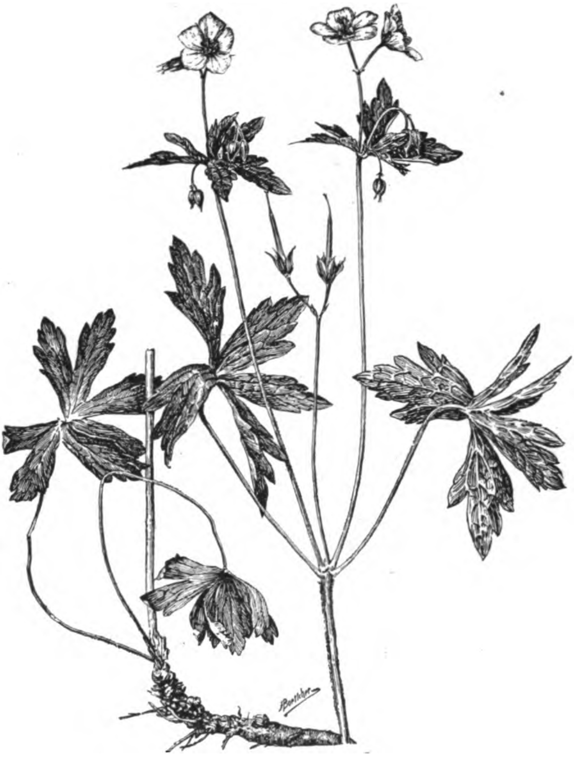

FIG. 17.—Crane's-bill (*Geranium maculatum*), flowering plant, showing also seed pods and rootstock.

Crane's-bill root, which is official in the United States Pharmacopœia, is used as a tonic and astringent.

SENECA SNAKEROOT.

Polygala senega L.

Pharmacopœial name.—Senega.

Other common names.—Senega snakeroot, Seneca-root, rattlesnake-root, mountain-flax.

Habitat and range.—Rocky woods and hillsides are the favorite haunts of this indigenous plant. It is found in such situations from New Brunswick and western New England to Minnesota and the Canadian Rocky Mountains, and south along the Allegheny Mountains to North Carolina and Missouri.

Description of plant.—The perennial root of this useful little plant sends up a number of smooth, slender, erect stems (as many as 15 to 20 or more), sometimes slightly tinged with red, from 6 inches to a foot in height, and generally unbranched. The leaves alternate on the stem, are lance shaped or oblong lance shaped, thin in texture, 1 to 2 inches long, and stemless. The flowering spikes are borne on the ends of the stems and consist of rather crowded, small, greenish white, insignificant flowers. The flowering period of Seneca snakeroot is from May to June. The spike blossoms gradually, and when the lowermost flowers have already fruited the upper part of the spike is still in flower. The seed capsules are small and contain two black, somewhat hairy seeds. (Fig. 18.) The short slender stalks supporting these seed capsules have a tendency to break off from the main axis before the seed is fully mature, leaving the spike in a rather ragged-looking condition, and the yield of seed, therefore, is not very large. Seneca snakeroot belongs to the milkwort family (Polygalaceæ).

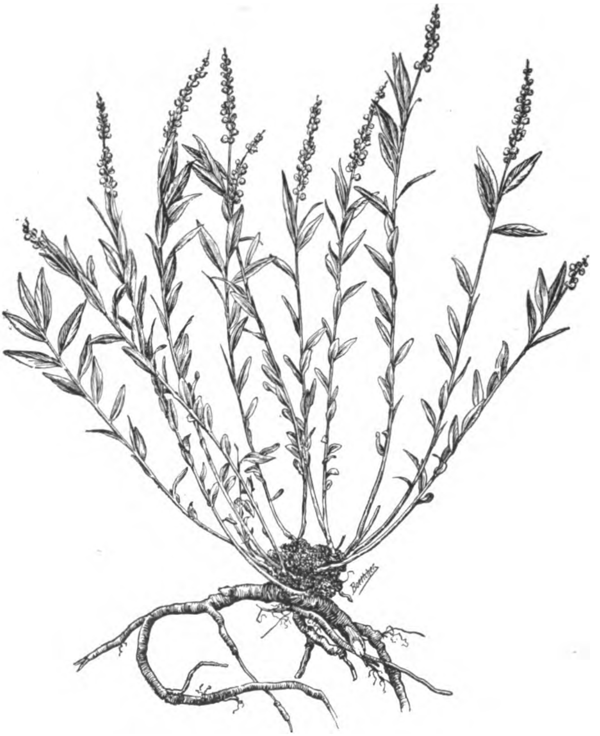

FIG. 18.—Seneca snakeroot (*Polygala senega*), flowering plant with root.

A form of Seneca snakeroot, growing mostly in the North-Central States and distinguished by its taller stems and broader leaves, has been called *Polygala senega* var. *latifolia*.

Description of root.—Seneca snakeroot (fig. 18) is described in the United States Pharmacopœia as follows: "Somewhat cylindrical, tapering, more or less flexuous, 3 to 15 cm. long and 2 to 8 mm. thick, bearing several similar horizontal branches and a few rootlets; crown knotty with numerous buds and short stem remnants; externally yellowish gray or brownish yellow, longitudinally wrinkled, usually marked by a keel which is more prominent in perfectly dry roots near the crown; fracture short, wood light yellow, usually excentrically developed; odor slight, nauseating; taste sweetish, afterwards acrid."

The Seneca snakeroots found in commerce vary greatly in size, that obtained from the South, which is really the official drug, being usually light colored and small. The principal supply of Seneca snakeroot now comes from Minnesota, Wisconsin, and farther northward, and this western Seneca snakeroot has a much larger, darker root, with a crown or head sometimes measuring 2 or 3 inches across and the upper part of the root very thick. It is also less twisted and not so distinctly keeled.

Seneca snakeroot is often much adulterated with the roots of other species of Polygala and of other plants.

Collection, prices, and uses.—The time for collecting Seneca snakeroot is in autumn. Labor conditions play a great part in the rise and fall of prices for this drug. It is said that very little Seneca snakeroot has been dug in the Northwest during 1906, due to the fact that the Indians and others who usually engage in this work were so much in demand as farm hands and railroad laborers, which paid them far better than the digging of Seneca snakeroot. Collectors receive from about 55 to 70 cents a pound for this root.

This drug, first brought into prominence as a cure for snake bite among the Indians, is now employed as an expectorant, emetic, and diuretic. It is official in the Pharmacopœia of the United States.

STILLINGIA.

Stillingia sylvatica L.

Pharmacopœial name.—Stillingia.

Other common names.—Queen's-delight, queen's-root, silverleaf, nettle-potato.

Habitat and range.—This plant is found in dry, sandy soil and in pine barrens from Maryland to Florida west to Kansas and Texas.

Description of plant.—Like most of the other members of the spurge family (Euphorbiaceæ) stillingia also contains a milky juice. This indigenous, herbaceous perennial is about 1 to 3 feet in height, bright green and somewhat fleshy, with crowded leaves of a somewhat leathery texture. The leaves are practically stemless and vary greatly in form, from lance shaped, oblong, to oval and elliptical, round toothed or saw toothed. The pale-yellow flowers, which appear from April to October, are borne in a dense terminal spike and consist of two kinds, male and female, the male flowers arranged in dense clusters around the upper part of the stalk and the female flowers occurring at the base of the spike. (Fig. 19.) The seeds are contained in a roundish 3-lobed capsule.

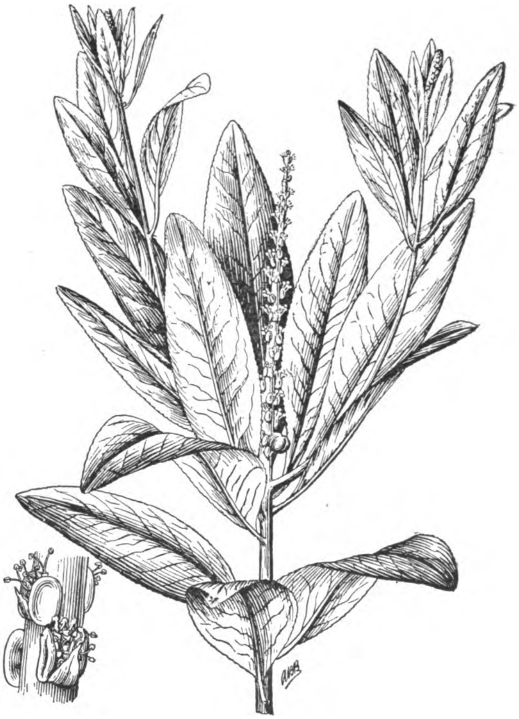

FIG. 19.—Stillingia (*Stillingia sylvatica*), upper portion of plant and part of spike showing male flowers. (After Bentley and Trimen, Medicinal Plants.)

Description of root.—Stillingia consists of somewhat cylindrical or slenderly spindle-shaped roots from 6 inches to a foot in length, slightly branched, the yellowish white, porous wood covered with a rather thick, reddish brown, wrinkled bark, the whole breaking with a fibrous fracture. As found in commerce, stillingia is usually in short transverse sections, the ends of the sections pinkish and fuzzy with numerous fine, silky bast fibers, and the bark showing scattered yellowish brown resin cells and milk ducts. It has a peculiar unpleasant odor, and a bitter, acrid, and pungent taste.

Collection, prices, and uses.—Stillingia root is collected late in autumn or early in spring, usually cut into short, transverse sections and dried. The price ranges from 3 to 5 cents a pound.

This root, which is official in the United States Pharmacopœia, has been a popular drug in the South for more than a century, and is employed principally as an alterative.

WILD SARSAPARILLA.

Aralia nudicaulis L.

Other common names.—False sarsaparilla, Virginian sarsaparilla, American sarsaparilla, small spikenard, rabbit's-root, shotbush, wild licorice.

Habitat and range.—Wild sarsaparilla grows in rich, moist woods from Newfoundland west to Manitoba and south to North Carolina and Missouri.

Description of plant.—This native herbaceous perennial, belonging to the ginseng family (Araliaceæ), produces a single, long-stalked leaf and flowering stalk from a very short stem, both surrounded or sheathed at the base by thin, dry scales. The leafstalk is about 12 inches long, divided at the top into three parts, each division bearing five oval, toothed leaflets from 2 to 5 inches long, the veins on the lower surface sometimes hairy.

The naked flowering stalk bears three spreading clusters of small, greenish flowers, each cluster consisting of from 12 to 30 flowers, produced from May to June, followed later in the season by purplish black roundish berries, about the size of the common elderberries. (Pl. V, fig. 2.)

Description of rootstock.—Wild sarsaparilla rootstock has a very fragrant, aromatic odor. Rabbits are said to be very fond of it, whence one of the common names, "rabbit's-root," is derived. The rootstock is rather long, horizontally creeping, somewhat twisted, and yellowish brown on the outside. (Pl. V, fig. 2.) The taste is warm and aromatic. The dried rootstock is brownish gray and wrinkled lengthwise on the outside, about one-fourth of an inch in thickness, the inside whitish with a spongy pith. The taste is sweetish and somewhat aromatic.

Collection, prices, and uses.—The root of wild sarsaparilla is collected in autumn, and brings from 5 to 8 cents a pound.

This has long been a popular remedy, both among the Indians and in domestic practice, and was official in the United States Pharmacopœia from 1820 to 1880. Its use is that of an alterative, stimulant, and diaphoretic, and in this it resembles the official sarsaparilla obtained from tropical America.

Similar species.—The American spikenard (*Aralia racemosa* L.), known also as spignet, spiceberry, Indian-root, petty-morrel, life-of-man, and old-man's-root, is employed like *Aralia nudicaulis.* It is distinguished from this by its taller, herbaceous habit, its much-branched stem from 3 to 6 feet high, and very large leaves consisting of thin, oval, heart-shaped, double saw-toothed leaflets. The small greenish flowers are arranged in numerous clusters, instead of only three as in *nudicaulis*, and also appear somewhat later, namely, from July to August. The berries are roundish, reddish brown, or dark purple.

The rootstock is shorter than that of *nudicaulis*, and much thicker, with prominent stem scars, and furnished with numerous, very long, rather thick roots. The odor and taste are stronger than in *nudicaulis.* It is also collected in autumn, and brings from 4 to 8 cents a pound.

The American spikenard occurs in similar situations as *nudicaulis*, but its range extends somewhat farther south, Georgia being given as the southern limit.

The California spikenard (*Aralia californica* Wats.) may be used for the same purposes as the other species. The plant is larger than *Aralia racemosa*, but otherwise is very much like it. The root is also larger than that of *A. racemosa*.

GINSENG.

Panax quinquefolium L.

Other common names.—American ginseng, sang, red-berry, five-fingers. (Pl. V, fig. 3.)

Habitat and range.—Ginseng is a native of this country, its favorite haunts being the rich, moist soil in hardwood forests from Maine to Minnesota southward to the mountains of northern Georgia and Arkansas. For some years ginseng has been cultivated in small areas from central New York to Missouri.

Description of plant.—Ginseng is an erect perennial plant growing from 8 to 15 inches in height, and bearing three leaves at the summit, each leaf consisting of five thin, stalked, ovate leaflets, long pointed at the apex, rounded or narrowed at the base, the margins toothed; the three upper leaflets are largest and the two lower ones smaller. From 6 to 20 greenish yellow flowers are produced in a cluster during July and August, followed later in the season by bright crimson berries. It belongs to the ginseng family (Araliaceæ).

Description of root.—Ginseng has a thick, spindle-shaped root, 2 to 3 inches long or more, and about one-half to 1 inch in thickness, often branched, the outside prominently marked with circles or wrinkles. (Pl. V, fig. 3.) The spindle-shaped root is simple at first, but after the second year it usually becomes forked or branched, and it is the branched root, especially if it resembles the human form, that finds particular favor in the eyes of the Chinese, who are the principal consumers of this root.

Ginseng root has a thick, pale yellowish white or brownish yellow bark, prominently marked with transverse wrinkles, the whole root fleshy and somewhat flexible. If properly dried, it is solid and firm. Ginseng has a slight aromatic odor, and the taste is sweetish and mucilaginous.

Collection and uses.—The proper time for digging ginseng root is in autumn, and it should be carefully washed, sorted, and dried. If collected at any other season of the year, it will shrink more and not have the fine plump appearance of the fall-dug root.

The National Dispensatory contains an interesting item concerning the collection of the root by the Indians. They gather the root only after the fruit has ripened, and it is said that they bend down the stem of ripened fruit before digging the root, covering the fruit with earth, and thus providing for future propagation. The Indians claim that a large percentage of the seeds treated in this way will germinate.

Although once official in the United States Pharmacopœia, from 1840 to 1880, it is but little used medicinally in this country except by the Chinese residents, most of the ginseng produced in this country being exported to China. The Chinese regard ginseng root as a panacea. It is on account of its commercial prominence that it is included in this paper.

Cultivation.—There is probably no plant that has become better known, at least by name, during the past ten years or more than ginseng. It has been heralded from north to south and east to west as a money-making crop. The prospective ginseng grower must not fail to bear in mind, however, that financial returns are by no means immediate. Special conditions and unusual care are required in ginseng cultivation, diseases must be contended with, and a long period of waiting is in store for him before he can realize on his crop.

Either roots or seeds may be planted, and the best success with ginseng is obtained by following as closely as possible the conditions of its native habitat. Ginseng needs a deep, rich soil, and, being a plant accustomed to the shade of forest trees, will require shade, which can be supplied by the erection of lath sheds over the beds. A heavy mulch of leaves or similar well-rotted vegetable material should be applied to the beds in autumn.

If roots are planted, they are set in rows about 8 inches apart and 8 inches apart in the row. In this way a marketable product will be obtained sooner than if grown from seed. The seed is sown in spring or autumn in drills 6 inches apart and about 2 inches apart in the row. The plants remain in the seed bed for two years and are then transplanted, being set about 8 by 8 inches apart. It requires from five to seven years to obtain a marketable crop from the seed. Seed intended for sowing should not be allowed to dry out, as this is supposed to destroy its vitality.

Price.—The price of wild ginseng roots ranges from $5 a pound upward. The cultivated root generally brings a lower price than the wild root, and southern ginseng roots are worth less than those from northern localities.

Exports.—The exports of ginseng for the year ended June 30, 1906, amounted to 160,949 pounds, valued at $1,175,844.

WATER-ERYNGO.

Eryngium yuccifolium Michx.

Synonym.—*Eryngium aquaticum* L.

Other common names.—Eryngium, eryngo, button-snakeroot, corn-snakeroot, rattlesnake-master, rattlesnake-weed, rattlesnake-flag.

Habitat and range.—Although sometimes occurring on dry land, water-eryngo usually inhabits swamps and low, wet ground, from the pine barrens of New Jersey westward to Minnesota and south to Texas and Florida.

Description of plant.—The leaves of this plant are grasslike in form, rigid, 1 to 2 feet long, and about one-half inch or a trifle more in width; they are linear, with parallel veins, pointed, generally clasping at the base, and the margins bristly with soft, slender spines. The stout, furrowed stem reaches a height of from 2 to 6 feet, and is generally unbranched except near the top. The insignificant whitish flowers are borne in dense, ovate-globular, stout-stemmed heads, appearing from June to September, and the seed heads that follow are ovate and scaly. (Pl. V, fig. 4.) Water-eryngo belongs to the parsley family (Apiaceæ) and is native in this country.

Description of rootstock.—The stout rootstock is very knotty, with numerous short branches, and produces many thick, rather straight roots (Pl. V, fig. 4), both rootstock and roots of a dark-brown color, the latter wrinkled lengthwise. The inside of the rootstock is yellowish white. Water-eryngo has a somewhat peculiar, slightly aromatic odor, and a sweetish, mucilaginous taste at first, followed by some bitterness and pungency.

Collection, prices, and uses.—The root of this plant is collected in autumn and brings from 5 to 10 cents a pound.

Water-eryngo is an old remedy, and one of its early uses, as the several common names indicate, was for the treatment of snake bites. It was official in the United States Pharmacopœia from 1820 to 1860, and is employed now as a diuretic and expectorant, and for promoting perspiration. In large doses it acts as an emetic, and the root, when chewed, excites a flow of saliva. It is said to resemble Seneca snakeroot in action.

AMERICAN ANGELICA.

Angelica atropurpurea L.

Synonym.—*Archangelica atropurpurea* Hoffm.

Other common names.—Angelica, purple-stemmed angelica, great angelica, high angelica, purple angelica, masterwort.

Habitat and range.—American angelica is a native herb, common in swamps and damp places from Labrador to Delaware and west to Minnesota.

Description of plant.—This strong-scented, tall, stout perennial reaches a height of from 4 to 6 feet, with a smooth, dark-purple, hollow stem 1 to 2 inches in diameter. The leaves are divided into three parts, each of which is again divided into threes; the rather thin segments are oval or ovate, somewhat acute, sharply toothed and sometimes deeply cut, and about 2 inches long. The lower leaves sometimes measure 2 feet in width, while the upper ones are smaller, but all have very broad expanded stalks. The greenish white flowers are produced from June to July in somewhat roundish, many-rayed umbels or heads, which sometimes are 8 to 10 inches in diameter. The fruits are smooth, compressed, and broadly oval. (Pl. VI, fig. 1.) American angelica belongs to the parsley family (Apiaceæ).

Description of root.—American angelica root is branched, from 3 to 6 inches long, and less than an inch in diameter. The outside is light brownish gray, with deep furrows, and the inside nearly white, the whole breaking with a short fracture and the thick bark showing fine resin dots. It has an aromatic odor, and the taste at first is sweetish and spicy, afterwards bitter. The fresh root is said to possess poisonous properties.

The root of the European or garden angelica (*Angelica officinalis* Moench) supplies much of the angelica root of commerce. This is native in northern Europe and is very widely cultivated, especially in Germany, for the root.

Collection, prices, and uses.—The root is dug in autumn and carefully dried. Care is also necessary in preserving the root, as it is very liable to the attacks of insects. American angelica root ranges from 6 to 10 cents a pound.

American angelica root, which was official in the United States Pharmacopœia from 1820 to 1860, is used as an aromatic, tonic, stimulant, carminative, diuretic, and diaphoretic. In large doses it acts as an emetic.

The seeds are also employed medicinally.

YELLOW JASMINE OR JESSAMINE.

Gelsemium sempervirens (L.) Ait. f.

Pharmacopœial name.—Gelsemium.

Other common names.—Carolina jasmine or jessamine, Carolina wild woodbine, evening trumpet-flower.

Habitat and range.—Yellow jasmine is a plant native to the South, found along banks of streams, in woods, lowlands, and thickets, generally near the coast, from the eastern part of Virginia to Florida and Texas, south to Mexico and Guatemala.

Description of plant.—This highly ornamental climbing or trailing plant is abundantly met with in the woods of the Southern States, its slender stems festooned over trees and fences and making its presence known by the delightful perfume exhaled by its flowers, filling the air with a fragrance that is almost overpowering wherever the yellow jasmine is very abundant.

The smooth, shining stems of this beautiful vine sometimes reach a length of 20 feet. The leaves are evergreen, lance shaped, entire, 1½ to 3 inches long, rather narrow, borne on short stems, and generally remaining on the vine during the winter. The flowers, which appear from January to April, are bright yellow, about 1 to 1½ inches long, the corolla funnel shaped. (Fig. 20.) They are very fragrant, but poisonous, and it is stated that the eating of honey derived from jasmine flowers has brought about fatal results.

Yellow jasmine is a perennial, and belongs to a family that is noted for its poisonous properties, namely, the Logania family (Loganiaceæ), which numbers among its members such powerful poisonous agents as the strychnine-producing tree.

Description of rootstock.—The rootstock of the yellow jasmine is horizontal and runs near the surface of the ground, attaining great length, 15 feet or more; it is branched, and here and there produces fibrous rootlets. When freshly removed from the ground it is very yellow, with a peculiar odor and bitter taste. For the drug trade it is generally cut into pieces varying from 1 inch to 6 inches in length, and when dried consists of cylindrical sections about 1 inch in thickness, the roots, of course, thinner. The bark is thin, yellowish brown, with fine silky bast fibers, and the wood is tough and pale yellow, breaking with a splintery fracture and showing numerous fine rays radiating from a small central pith. Yellow jasmine has a bitter taste and a pronounced heavy odor.

Collection, prices, and uses.—The root of yellow jasmine is usually collected just after the plant has come into flower and is cut into pieces from 1 to 6 inches long. It is often adulterated with portions of the stems, but these can be distinguished by their thinness and dark purplish color. The prices range from 3 to 5 cents a pound.

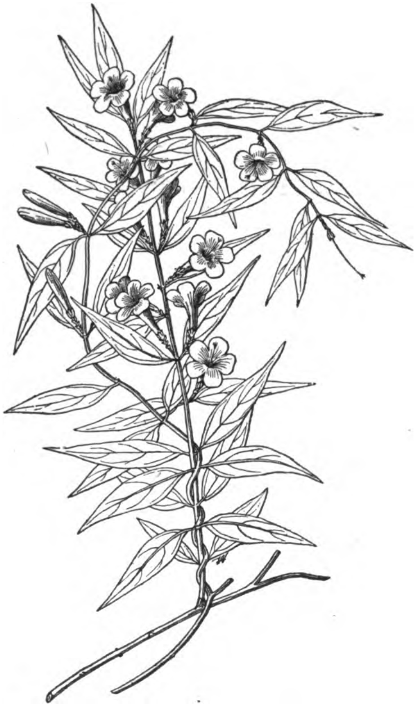

FIG. 20.—Yellow jasmine (*Gelsemium sempervirens*).

Yellow jasmine, which is official in the United States Pharmacopœia, is used for its powerful effect on the nervous system.

PINKROOT.

Spigelia marilandica L.

Pharmacopœial name.—Spigelia.

Other common names.—Carolina pinkroot, Carolina pink, Maryland pink, Indian pink, starbloom, wormgrass, wormweed, American wormroot.

Habitat and range.—This pretty little plant is found in rich woods from New Jersey to Florida, west to Texas and Wisconsin, but occurring principally in the Southern States. It is fast disappearing, however, from its native haunts.

Description of plant.—Pinkroot belongs to the same family as the yellow jasmine, namely, the Logania family (Loganiaceæ), noted for its poisonous species. It is a native perennial herb, with simple, erect stem 6 inches to 1½ feet high, nearly smooth. The leaves are stemless, generally ovate, pointed at the apex and rounded or narrowed at the base; they are from 2 to 4 inches long, one-half to 2 inches wide, smooth on the upper surface, and only slightly hairy on the veins on the lower surface. The rather showy flowers are produced from May to July in a terminal one-sided spike; they are from 1 to 2 inches in length, somewhat tube shaped, narrowed below, slightly inflated toward the center, and again narrowed or contracted toward the top, and terminating in five lance-shaped lobes; the flowers are very showy, with their brilliant coloring—bright scarlet on the outside, and the inside of the tube and the lobes a bright yellow. The seed capsule is double, consisting of two globular portions more or less united, and containing numerous seeds. (Pl. VI, fig. 2.)

Description of rootstock.—The rootstock is rather small, from 1 to 2 inches in length and about one-sixteenth of an inch in thickness. It is somewhat crooked or bent, dark brown, with a roughened appearance of the upper surface caused by cup-shaped scars, the remains of former annual stems. The lower surface and the sides have numerous long, finely branched, lighter colored roots, which are rather brittle. Pinkroot has a pleasant, aromatic odor, and the taste is described as sweetish, bitter, and pungent.

Collection, prices, and uses.—Pinkroot is collected after the flowering period. It is said to be scarce, and was reported as becoming scarce as long ago as 1830. The price paid to collectors ranges from 25 to 40 cents a pound.

The roots of other plants, notably those of the East Tennessee pinkroot (*Ruellia ciliosa* Pursh), are often found mixed with the true pinkroot, and the *Ruellia ciliosa* is even substituted for it. This adulteration or substitution probably accounts for the inertness which has sometimes been attributed to the true pinkroot and which has caused it to fall into more or less disuse. It has long been known that the true pinkroot was adulterated, but this adulteration was supposed to be caused by the admixture of Carolina phlox (*Phlox carolina* L., now known as *Phlox ovata* L.), but this is said now to be no part of the substitution.[a]

The rootstock of *Ruellia ciliosa* is larger and not as dark as that of the Maryland pinkroot and has fewer and coarser roots, from which the bark readily separates, leaving the whitish wood exposed.

Pinkroot was long known by the Indians, and its properties were made known to physicians by them. It is official in the United States Pharmacopœia, and is used principally as an anthelmintic.

AMERICAN COLOMBO.

Frasera carolinensis Walt.

Synonym.—*Frasera walteri* Michx.

Other common names.—Frasera, meadowpride, pyramid-flower, pyramid-plant, Indian lettuce, yellow gentian, ground-centaury.

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[a] Bulletin 100, Part V, Bureau of Plant Industry, "The Drug Known as Pinkroot."

Habitat and range.—American colombo occurs in dry soil from the western part of New York to Wisconsin, south to Georgia and Kentucky.

Description of plant.—During the first and second year of the growth of this plant only the root leaves are produced. These are generally somewhat rounded at the summit, narrowed toward the base, and larger than the stem leaves, which develop in the third year. The leaves are deep green and produced mostly in whorls of four, the stem leaves being 3 to 6 inches in length and oblong or lance shaped. In the third year the stem is developed and the flowers are produced from June to August. The stem is stout, erect, cylindrical, and 3 to 8 feet in height. The flowers of American colombo are borne in large terminal, handsome pyramidal clusters sometimes 2 feet in length, and are greenish yellow or yellowish white, dotted with brown purple. They are slender stemmed, about 1 inch across, with a wheel-shaped, 4-parted corolla. The seeds are contained in a much compressed capsule. (Fig. 21.) American colombo is an indigenous perennial, and belongs to the gentian family (Gentianaceæ).

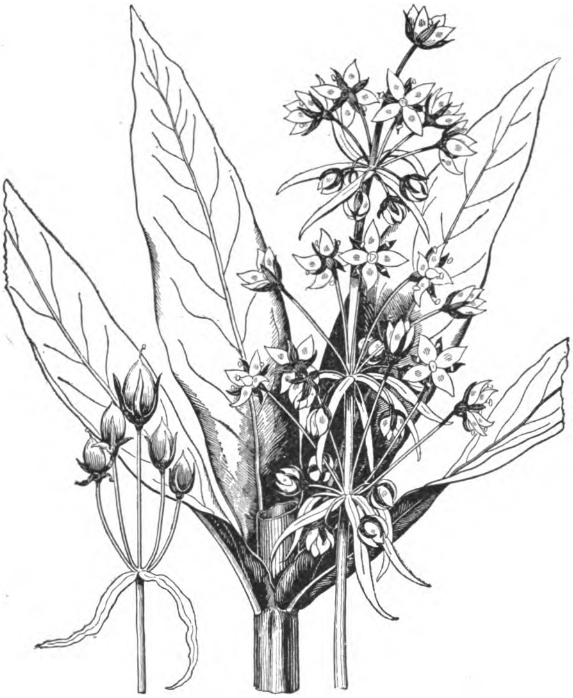

FIG. 21.—American colombo (*Frasera carolinensis*), leaves, flowers, and seed pods.

Description of root.—The root is long, horizontal, spindle shaped, yellow, and wrinkled. In the fresh state it is fleshy and quite heavy. The American colombo root of commerce, formerly in transverse slices, now generally occurs in lengthwise slices. The outside is yellowish or pale orange and the inside spongy and pale yellow. The taste is bitter. American colombo root resembles the official gentian root in taste and odor, and the uses are also similar.

Collection, prices, and uses.—The proper time for collecting American colombo root is in the autumn of the second year or in March or April of the third year. It is generally cut into lengthwise slices before drying. The price of American colombo root ranges from 3 to 5 cents a pound.

The dried root, which was official in the United States Pharmacopœia from 1820 to 1880, is used as a simple tonic. In the fresh state the root possesses emetic and cathartic properties.

BLACK INDIAN HEMP.

Apocynum cannabinum L.

Pharmacopœial name.—Apocynum.

Other common names.—Canadian hemp, American hemp, amy-root, bowman's-root, bitterroot, Indian-physic, rheumatism-weed, milkweed, wild cotton, Choctaw-root.

The name "Indian hemp" is often applied to this plant, but it should never be used without the adjective "black." "Indian hemp" is a name that properly belongs to *Cannabis indica*, a true hemp plant, from which the narcotic drug "hashish" is obtained.

Habitat and range.—Black Indian hemp is a native of this country, and may be found in thickets and along the borders of old fields throughout the United States.

Description of plant.—This is a common herbaceous perennial about 2 to 4 feet high, with erect or ascending branches, and, like most of the plants belonging to the dogbane family (Apocynaceæ), contains a milky juice. The short-stemmed opposite leaves are oblong, lance-shaped oblong or ovate-oblong, about 2 to 6 inches long, usually sharp pointed, the upper surface smooth and the lower sometimes hairy. The plant is in flower from June to August and the small greenish white flowers are borne in dense heads, followed later by the slender pods, which are about 4 inches in length and pointed at the apex. (Fig. 22.)

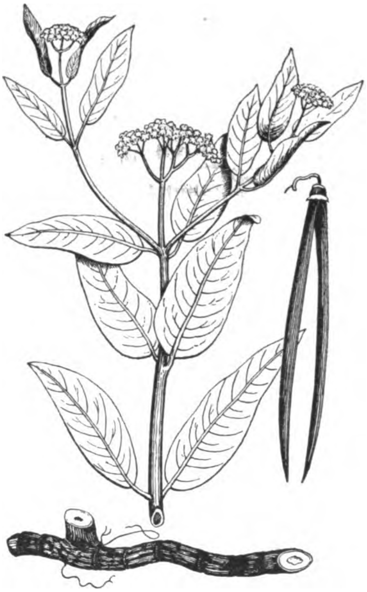
FIG. 22.—Black Indian hemp (*Apocynum cannabinum*), flowering portion, pods, and rootstock. (After King's American Dispensatory.)

Other species.—Considerable confusion seems to exist in regard to which species yields the root which has proved of greatest value medicinally. The Pharmacopœia directs that "the dried rhizome and roots of *Apocynum cannabinum* or of closely allied species of Apocynum" be used.

In the older botanical works and medical herbals only two species of Apocynum were recognized, namely, *A. cannabinum* L. and *A. androsaemifolium* L., although it was known that both of these were very variable. In the newer botanical manuals both of these species still hold good, but the different forms and variations are now recognized as distinct species, those formerly referred to *cannabinum* being distinguished by the erect or nearly erect lobes of the corolla, and those of the *androsaemifolium* group being distinguished by the spreading or recurved lobes of the corolla.

Among the plants that were formerly collected as *Apocynum cannabinum* or varietal forms of it, and which are now considered as distinct species, may be mentioned the following:

Riverbank-dogbane (*A. album* Greene), which frequents the banks of rivers and similar moist locations from Maine to Wisconsin, Virginia, and Missouri.

This plant is perfectly smooth and has white flowers and relatively smaller leaves than *A. cannabinum.*

Velvet dogbane (*A. pubescens* R. Br.), which is common from Virginia to Illinois, Iowa, and Missouri. The entire plant has a soft, hairy or velvety appearance, which renders identification easy. According to the latest edition of the National Standard Dispensatory it is not unlikely that this is the plant that furnishes the drug that has been so favorably reported upon.

Apocynum androsaemifolium is also gathered by drug collectors for *Apocynum cannabinum.* Its root is likewise employed in medicine, but its action is not the same as that of *cannabinum,* and it should therefore not be substituted for it. It closely resembles *cannabinum.*

Description of rootstock.—The following description of the drug as found in commerce is taken from the United States Pharmacopœia: "Of varying length, 3 to 8 mm. thick, cylindrical or with a few angles produced by drying, lightly wrinkled longitudinally, and usually more or less fissured transversely; orange-brown, becoming gray-brown on keeping; brittle; fracture sharply transverse, exhibiting a thin brown layer of cork, the remainder of the bark nearly as thick as the radius of the wood, white or sometimes pinkish, starchy, containing laticiferous ducts; the wood yellowish, having several rings, finely radiate and very coarsely porous; almost inodorous, the taste starchy, afterwards becoming bitter and somewhat acrid."

Collection, prices, and uses.—The root of black Indian hemp is collected in autumn and brings from 8 to 10 cents a pound.

It is official in the United States Pharmacopœia and has emetic, cathartic, diaphoretic, expectorant, and diuretic properties, and on account of the last-named action it is used in dropsical affections.

The tough fibrous bark of the stalks of black Indian hemp was employed by the Indians as a substitute for hemp in making twine, fishing nets, etc.

PLEURISY-ROOT.

Asclepias tuberosa L.

Pharmacopœial name.—Asclepias.

Other common names.—Butterfly-weed, Canada-root, Indian-posy, orange-root, orange swallowwort, tuberroot, whiteroot, windroot, yellow or orange milkweed.

Habitat and range.—Pleurisy-root flourishes in the open or in pine woods, in dry sandy or gravelly soil, usually along the banks of streams. Its range extends from Ontario and Maine to Minnesota, south to Florida, Texas, and Arizona, but it is found in greatest abundance in the South.

Description of plant.—This is a very showy and ornamental perennial plant, indigenous to this country, and belonging to the milkweed family (Asclepiadaceæ); it is erect and rather stiff in habit, but with brilliant heads of bright orange-colored flowers that attract attention from afar.

The stems are rather stout, erect, hairy, about 1 to 2 feet in height, sometimes branched near the top, and bearing a thick growth of leaves. These are either stemless or borne on short stems, are somewhat rough to the touch, 2 to 6 inches long, lance shaped or oblong, the apex either sharp pointed or blunt, with a narrow, rounded, or heart-shaped base. The flower heads, borne at the ends of the stem and branches, consist of numerous, oddly shaped orange-colored flowers. The corolla is composed of five segments, which are reflexed or turned back, and the crown has five erect or spreading "hoods," within each of which is a slender incurved horn. The plant is in flower for some time, usually from June to September, followed late in fall by pods, which are from 4 to 5 inches long, green, tinged with red, finely hairy on the outside, and containing the seeds with their long silky hairs. (Pl. VI, fig. 3.) Unlike the other milkweeds, the pleurisy-root contains little or no milky juice.

Description of root.—The root of this plant is large, white and fleshy, spindle shaped, branching. (Pl. VI, fig. 3.) As found in commerce it consists of lengthwise or crosswise pieces from 1 to 6 inches in length and about three-fourths of an inch in thickness. It is wrinkled lengthwise and also transversely and has a knotty head. The thin bark is orange brown and the wood yellowish, with white rays. It has no odor, and a somewhat bitter, acrid taste.

Collection, prices, and uses.—The root, which is usually found rather deep in the soil, is collected in autumn, cut into transverse or lengthwise slices, and dried. The price ranges from 6 to 10 cents a pound.

Pleurisy-root was much esteemed by the Indians, has long been used in domestic practice, and is official in the United States Pharmacopœia. It is used in disordered digestion and in affections of the lungs, in the last-named instance to promote expectoration, relieve pains in the chest, and induce easier breathing. It is also useful in producing perspiration.

Other species.—Besides the official pleurisy-root there are two other species of Asclepias which are employed to some extent for the same purposes, namely, the common milkweed and the swamp-milkweed.

The common milkweed (*Asclepias syriaca* L.) is a perennial, native in fields and waste places from Canada to North Carolina and Kansas. It has a stout, usually simple stem 3 to 5 feet in height and oblong or oval leaves, smooth on the upper surface and densely hairy beneath. The flowers, similar in form to those of *Asclepias tuberosa*, are pinkish purple and appear from June to August, followed by erect pods 3 to 5 inches long, wooly with matted hairs and covered with prickles and borne on recurved stems. The plant contains an abundance of milky juice.

The root of the common milkweed is from 1 to 6 feet long, cylindrical, and finely wrinkled. The short branches and scars left by former stems give the root a rough, knotty appearance. The bark is thick, grayish brown, and the inside white, the root breaking with a short, splintery fracture. Common milkweed root has a very bitter taste, but no odor.

It is collected in autumn and cut into transverse slices before drying. Common milkweed root ranges from 6 to 8 cents a pound.

Swamp-milkweed (*Asclepias incarnata* L.) is a native perennial herb found in swamps from Canada to Tennessee and Kansas. The slender stem, leafy to the top, is 1 to 2 feet in height, branehed above, the leaves lance shaped or oblong lance shaped. The flowers, also similar to those of *tuberosa*, appear from July to September, and are flesh colored or rose colored. The pods are 2 to 3½ inches long, erect, and very sparingly hairy.

The root of the swamp-milkweed, which is also collected in autumn, is not quite an inch in length, hard and knotty, with several light-brown rootlets. The tough white wood, which has a thick central pith, is covered with a thin, yellowish brown bark. It is practically without odor, and the taste, sweetish at first, finally becomes bitter. This root brings about 3 cents a pound.

COMFREY.

Symphytum officinale L.

Other common names.—Symphytum, healing-herb, knitback, ass-ear, backwort, blackwort, bruisewort, gum-plant, slippery-root.

Habitat and range.—Comfrey is naturalized from Europe, and occurs in waste places from Newfoundland to Minnesota, south to Maryland.

Description of plant.—This coarse, rough, hairy perennial herb is from 2 to 3 feet high, erect and branched, with thick, rough leaves, the lower ones ovate lance shaped, 3 to 10 inches long, pointed at the apex, and narrowed at the base into margined stems. The uppermost leaves are lance shaped, smaller, and stemless. Comfrey is in flower from June to August, the purplish or dirty-white, tubular, bell-shaped flowers numerous and borne in dense terminal clusters. (Pl. VI, fig. 4.) The nutlets which follow are brown, shining, and somewhat wrinkled. Comfrey belongs to the borage family (Boraginaceæ).

Description of root.—Comfrey has a large, deep, spindle-shaped root, thick and fleshy at the top, white inside, and covered with a thin, blackish brown bark. (Pl. VI, fig. 4.) The dried root is hard, black, and very deeply and roughly wrinkled, breaking with a smooth, white, waxy fracture. As it occurs in commerce it is in pieces ranging from about an inch to several inches in length, only about one-fourth of an inch in thickness, and usually considerably bent. It has a very mucilaginous, somewhat sweetish and astringent taste, but no odor.

Collection, prices, and uses.—The root is dug in autumn, or sometimes in early spring. Comfrey root when first dug is very fleshy and juicy, but about four-fifths of its weight is lost in drying. The price ranges from 4 to 8 cents a pound.

The mucilaginous character of comfrey root renders it useful in coughs and diarrheal complaints. Its action is demulcent and slightly astringent.

The leaves are also used to some extent.

STONEROOT.

Collinsonia canadensis L.

Other common names.—Collinsonia, knobroot, knobgrass, knobweed, knotroot, horse-balm, horseweed, richweed, richleaf, ox-balm, citronella.

Habitat and range.—Stoneroot is found in moist, shady woods from Maine to Wisconsin, south to Florida and Kansas.

Description of plant.—Like most of the other members of the mint family (Menthaceæ), stoneroot is aromatic also, the fresh flowering plant possessing a very pleasant, lemon-like odor. It is a tall, perennial herb, growing as high as 5 feet. The stem is stout, erect, branched, smooth, or the upper part hairy.

The leaves are opposite, about 3 to 8 inches long, thin, ovate, pointed at the apex, narrowed or sometimes heart shaped at the base, and coarsely toothed; the lower leaves are largest and are borne on slender stems, while the upper ones are smaller and almost stemless. Stoneroot is in flower from July to October, producing large, loose, open terminal panicles or heads of small, pale-yellow lemon-scented flowers. The flowers have a funnel-shaped 2-lipped corolla, the lower lip larger, pendent, and fringed, with two very much protruding stamens. (Pl. VII, fig. 1.)

Description of root.—Even the fresh root of this plant is very hard. It is horizontal, large, thick, and woody, and the upper side is rough and knotty and branched irregularly. (Pl. VII, fig. 1.) The odor of the root is rather disagreeable, and the taste pungent and spicy. In the fresh state, as well as when dry, the root is extremely hard, whence the common name "stoneroot." The dried root is grayish brown externally, irregularly knotty on the upper surface from the remains of branches and the scars left by former stems, and the lower surface showing a few thin roots. The inside of the root is hard and whitish.

Collection, prices, and uses.—Stoneroot, which is collected in autumn, is employed for its tonic, astringent, diuretic, and diaphoretic effects. The price of the root ranges from 2 to 3½ cents a pound.

The leaves are used by country people as an application to bruises.

CULVER'S-ROOT.

Veronica virginica L.[a]

Synonym.—*Leptandra virginica* (L.) Nutt.[a]

Pharmacopœial name.—Leptandra.

Other common names.—Culver's-physic, blackroot, bowman's-root, Beaumont-root, Brinton-root, tall speedwell, tall veronica, physic-root, whorlywort.

Habitat and range.—This common indigenous herb is found abundantly in moist, rich woods, mountain valleys, meadows, and thickets from British Columbia south to Alabama, Missouri, and Nebraska.

Description of plant.—Culver's-root is a tall, slender-stemmed perennial belonging to the figwort family (Scrophulariaceæ). It is from 3 to 7 feet in height, with the leaves arranged around the simple stems in whorls of three to nine. The leaves are borne on very short stems, are lance shaped, long pointed at the apex, narrowed at the base, and sharply toothed, 3 to 6 inches in length, and 1 inch or less in width. The white tube-shaped flowers, with two long protruding stamens, are produced from June to September and are borne in several terminal, densely crowded, slender, spikelike heads from 3 to 9 inches long. (Fig. 23.)

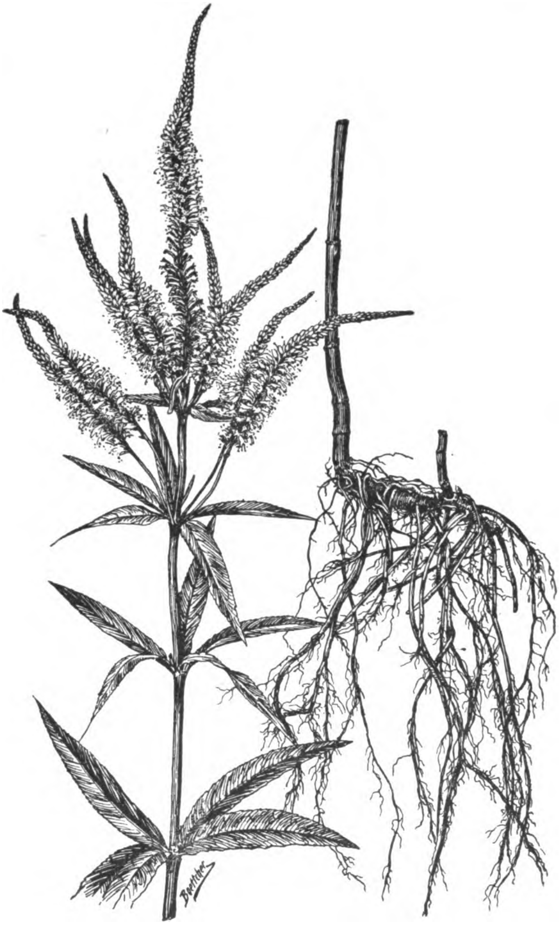

FIG. 23.—Culver's-root (*Veronica virginica*), flowering top and rootstock.

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[a] Some authors hold that this plant belongs to the genus Leptandra and that its name should be *Leptandra virginica* (L.) Nutt. The Pharmacopœia is here followed.

The flowers, as stated, are usually white, though the color may vary from a pink to bluish or purple, and on account of its graceful spikes of pretty flowers it is often cultivated in gardens as an ornamental plant. The fruits are small, oblong, compressed, many-seeded capsules.

Description of rootstock.—After they are dried the rootstocks have a grayish brown appearance on the outside, and the inside is hard and yellowish, either with a hollow center or a brownish or purplish pith. When broken the fracture is tough and woody. The rootstock measures from 4 to 6 inches in length, is rather thick and bent, with branches resembling the main rootstock. The upper surface has a few stem scars, and from the sides and underneath numerous coarse, brittle roots are produced, which have the appearance of having been artificially inserted into the rootstock. (Fig. 23.) Culver's-root has a bitter and acrid taste, but no odor.

Collection, prices, and uses.—The rootstock and roots should be collected in the fall of the second year. When fresh these have a faint odor, resembling somewhat that of almonds, which is lost in drying. The bitter, acrid taste of Culver's-root also becomes less the longer it is kept, and it is said that it should be kept at least a year before being used. The price paid to collectors ranges from 6 to 10 cents a pound.

Culver's-root, which is official in the United States Pharmacopœia, is used as an alterative, cathartic, and in disorders of the liver.

DANDELION.

Taraxacum officinale Weber.[a]

Synonyms.—*Taraxacum taraxacum* (L.) Karst.;[a] *Taraxacum dens-leonis* Desf.

Pharmacopœial name.—Taraxacum.

Other common names.—Blow-ball, cankerwort, doon-head-clock, fortune-teller, horse gowan, Irish daisy, yellow gowan, one-o'clock. (Fig. 24.)

Habitat and range.—With the exception, possibly, of a few localities in the South, the dandelion is at home almost everywhere in the United States, being a familiar weed in meadows and waste places, and especially in lawns. It has been naturalized in this country from Europe and is distributed as a weed in all civilized parts of the world.

Description of plant.—It is hardly necessary to give a description of the dandelion, as almost everyone is familiar with the coarsely toothed, smooth, shining green leaves, the golden-yellow flowers which open in the morning and only in fair weather, and the round, fluffy seed heads of this only too plentiful weed of the lawns. In spring the young, tender leaves are much sought after by the colored market women about Washington, who collect them by the basketful and sell them for greens or salad.

Dandelion is a perennial belonging to the chicory family (Cichoriaceæ), and is in flower practically throughout the year. The entire plant contains a white milky juice.

Description of root.—The dandelion has a large, thick, and fleshy taproot, sometimes measuring 20 inches in length. In commerce, dandelion root is usually found in pieces 3 to 6 inches long, dark brown on the outside and strongly wrinkled lengthwise. It breaks with a short fracture and shows the thick whitish bark marked with circles of milk ducts and a thin woody center, which is yellow and porous. It is practically without odor and has a bitter taste.

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[a] Although the combination *Taraxacum taraxacum* (L.) Karst. should be accepted by right of priority, the usage of the Pharmacopœia is followed.

Collection and uses.—Late in summer and in fall the milky juice becomes thicker and the bitterness increases, and this is the time to collect dandelion root. It should be carefully washed and thoroughly dried. Dandelion roots lose considerably in drying, weighing less than half as much as the fresh roots. The dried root should not be kept too long, as drying diminishes its medicinal activity. It is official in the United States Pharmacopœia.

Dandelion is used as a tonic in diseases of the liver and in dyspepsia.

Imports and prices.—Most of the dandelion root found on the market is collected in central Europe. There has been an unusually large demand for dandelion root during the season of 1907, and according to the weekly records contained in the "Oil, Paint, and Drug Reporter," the imports entered at the port of New York from January 1. 1907, to the end of May amounted to about 47,000 pounds. The price ranges from 4 to 10 cents a pound.

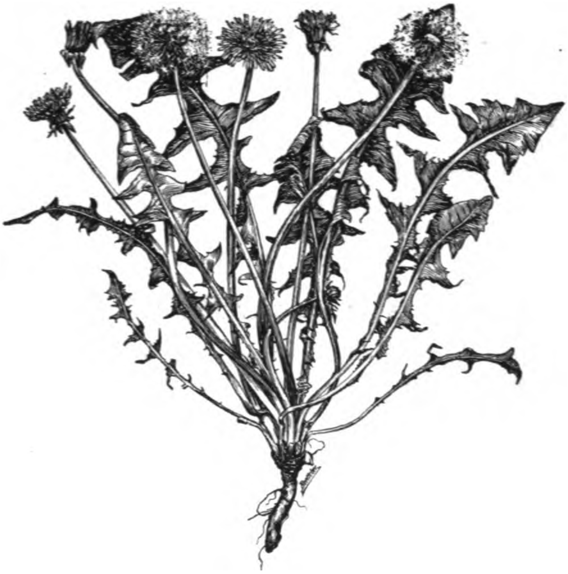

FIG. 24.—Dandelion (*Taraxacum officinale*).

QUEEN-OF-THE-MEADOW.

Eupatorium purpureum L.

Other common names.—Gravelroot, Indian gravelroot, joe-pye-weed, purple boneset, tall boneset, kidneyroot, king-of-the-meadow, marsh-milkweed, motherwort, niggerweed, quillwort, slunkweed, trumpetweed.

Habitat and range.—This common native perennial herb occurs in low grounds and dry woods and meadows from Canada to Florida and Texas.

Description of plant.—The stout, erect, green or purple stem of this plant grows from 3 to 10 feet in height, and is usually smooth, simple or branched at the top. The thin, veiny leaves are 4 to 12 inches long, 1 to 3 inches wide, ovate or ovate lance shaped, sharp pointed, toothed, and placed around the stem in whorls of three to six. While the upper surface of the leaves is smooth, there is usually a slight hairiness along the veins on the lower surface, otherwise smooth. Toward the latter part of the summer and in early fall queen-of-the-meadow is in flower, producing 5 to 15 flowered pink or purplish heads, all aggregated in large compound clusters, which present a rather showy appearance. (Pl. VII, fig. 2.) This plant belongs to the aster family (Asteraceæ).

Another species which is collected with this and for similar purposes, and by some regarded as only a variety, is the spotted boneset or spotted joe-pye-weed (*Eupatorium maculatum* L.). This is very similar to *E. purpureum*, but it does not grow so tall, is rough-hairy, and has the stem spotted with purple. The thicker leaves are coarsely toothed and in whorls of three to five, and the flower clusters are flattened at the top rather than elongated as in *E. purpureum*.

It is found in moist soil from New York to Kentucky, westward to Kansas, New Mexico, Minnesota, and as far up as British Columbia.

Description of root.—Queen-of-the-meadow root, as it occurs in commerce, is blackish and woody, furnished with numerous long dark-brown fibers, which are furrowed or wrinkled lengthwise and whitish within. It has a bitter, aromatic, and astringent taste.

Collection, prices, and uses.—The root is collected in autumn and is used for its astringent and diuretic properties. It was official in the United States Pharmacopœia from 1820 to 1840. The price ranges from 2½ to 4 cents a pound.

ELECAMPANE.

Inula helenium L.

Other common names.—Inula, inul, horseheal, elf-dock, elfwort, horse-elder, scabwort, yellow starwort, velvet dock, wild sunflower.

Habitat and range.—This perennial herb has been naturalized from Europe, and is found along roadsides and in fields and damp pastures from Nova Scotia to North Carolina, westward to Missouri and Minnesota. It is native also in Asia.

Description of plant.—When in flower elecampane resembles the sunflower on a small scale. Like the sunflower, it is a member of the aster family (Asteraceæ). It is a rough plant, growing from 3 to 6 feet in height, but producing during the first year only root leaves, which attain considerable size. In the following season the stout densely hairy stem develops, attaining a height of from 3 to 6 feet.

The leaves are broadly oblong in form, toothed, the upper surface rough and the under side densely soft-hairy. The basal or root leaves are borne on long stems, and are from 10 to 20 inches long and 4 to 8 inches wide, while the upper leaves are smaller and stemless or clasping.

About July to September the terminal flower heads are produced, either singly or a few together. As already stated, these flower heads look very much like small sunflowers, 2 to 4 inches broad, and consist of long, narrow, yellow rays, 3 toothed at the apex, and the disk also is yellow. (Pl. VII, fig. 3.)

Description of root.—Elecampane has a large, long, branching root, pale yellow on the outside and whitish and fleshy within. (Pl. VII, fig. 3.) When dry the outside turns a grayish brown or dark brown, and is generally finely wrinkled lengthwise. As found in commerce, elecampane is usually in transverse or lengthwise slices, light yellow or grayish and fleshy internally, dotted with numerous shining resin cells, and with overlapping brown and wrinkled bark. These slices become flexible in damp weather, and tough, but when they are dry they break with a short fracture. The root has at first a strongly aromatic odor, which has been described by some as resembling a violet odor, but this diminishes in drying. The taste is aromatic, bitterish, and pungent.

Collection, prices, and uses.—The best time for collecting elecampane is in the fall of the second year. If collected later than that the roots are apt to be stringy and woody. Owing to the interlacing habit of the rootlets, much dirt adheres to the root, but it should be well cleaned, cut into transverse or lengthwise slices, and carefully dried in the shade. Collectors receive from 3 to 5 cents a pound for this root.

Elecampane, which was official in the United States Pharmacopœia of 1890, is much used in affections of the respiratory organs, in digestive and liver disorders, catarrhal discharges, and in skin diseases.

ECHINACEA.

Brauneria angustifolia (DC.) Heller.

Synonym.—*Echinacea angustifolia* DC.

Other common names.—Pale-purple coneflower, Sampson-root, niggerhead (in Kansas).

Habitat and range.—Echinacea is found in scattered patches in rich prairie soil or sandy soil from Alabama to Texas and northwestward, being most abundant in Kansas and Nebraska. Though not growing wild in the Eastern States, it has succeeded well under cultivation in the testing gardens of the Department of Agriculture at Washington, D. C.

Description of plant.—This native herbaceous perennial, belonging to the aster family (Asteraceæ), grows to a height of from 2 to 3 feet. It sends up a rather stout bristly-hairy stem, bearing thick rough-hairy leaves, which are broadly lance shaped or linear lance shaped, entire, 3 to 8 inches long, narrowed at each end, and strongly three nerved. The lower leaves have slender stems, but as they approach the top of the plant the stems become shorter and some of the upper leaves are stemless.

The flower heads, appearing from July to October, are very pretty, and the plant would do well as an ornamental in gardens. The flowers remain on the plant for a long time, and the color varies from whitish rose to pale purple. The heads consist of ray flowers and disk flowers, the former constituting the "petals" surrounding the disk, and the disk itself being composed of small, tubular, greenish yellow flowers. When the flowers first appear the disk is flattened or really concave, but as the flowering progresses it becomes conical in shape. The brown fruiting heads are conical, chaffy, stiff, and wiry. (Pl. VII, fig. 4.)

Description of root.—Echinacea has a thick, blackish root (Pl. VII, fig. 4), which in commerce occurs in cylindrical pieces of varying length and thickness. The dried root is grayish brown on the outside, the bark wrinkled lengthwise and sometimes spirally twisted. It breaks with a short, weak fracture, showing yellow or greenish yellow wood wedges, which give the impression that the wood is decayed.

The odor is scarcely perceptible, and the taste is mildly aromatic, afterwards becoming acrid and inducing a flow of saliva.

Collection, prices, and uses.—The root of echinacea is collected in autumn and brings from 20 to 30 cents a pound. It is said that echinacea varies greatly in quality, due chiefly to the locality in which it grows. According to J. U. Lloyd, the best quality comes from the prairie lands of Nebraska, and that from marshy places is inferior.

Echinacea is said to be an alterative, and to promote perspiration and induce a flow of saliva. The Indians used the freshly scraped roots for the cure of snake bites.

BURDOCK.

Arctium lappa L.

Synonym.—Lappa major Gaertn.

Pharmacopœial name.—Lappa.

Other common names.—Cockle-button, cuckold-dock, beggar's-buttons, hurr-bur, stick-button, hardock, bardane. (Fig. 25.)

Habitat and range.—Burdock, one of our most common weeds, was introduced from the Old World. It grows along roadsides, in fields, pastures, and waste places, being very abundant in the Eastern and Central States and in some scattered localities in the West.

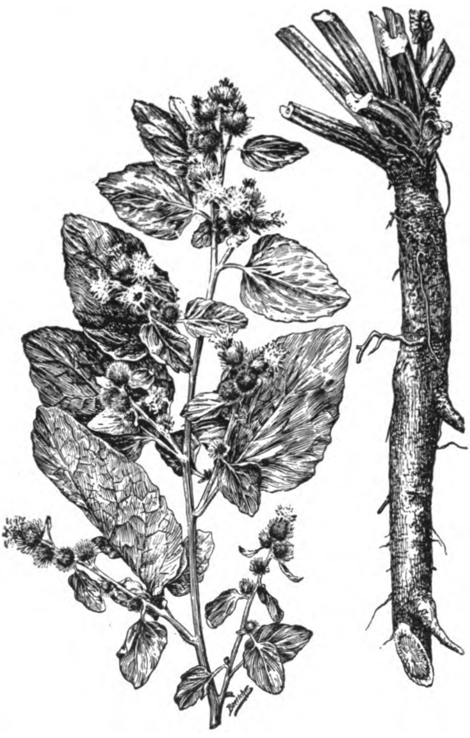

FIG. 25.—Burdock (*Arctium lappa*), flowering branch and root.

Description of plant.—Farmers are only too well acquainted with this coarse, unsightly weed. During the first year of its growth this plant, which is a biennial belonging to the aster family (Asteraceæ), produces only a rosette of large, thin leaves from a long tapering root. In the second year a round, fleshy, and branched stem is produced, the plant when full grown measuring from 3 to 7 feet in height. This stem is branched, grooved, and hairy, bearing very large leaves, the lower ones often measuring 18 inches in length. The leaves are placed alternately on the stem, on long, solid, deeply furrowed leafstalks; they are thin in texture, smooth on the upper surface, pale and woolly underneath; usually heart shaped, but sometimes roundish or oval, with even, wavy, or toothed margins.

The flowers are not produced until the second year, appearing from July until frost. Burdock flowers are purple, in small, clustered heads armed with hooked tips, and the spiny burs thus formed are a great pest, attaching themselves to clothing and to the wool and hair of animals. Burdock is a very prolific seed producer, one plant bearing as many as 400,000 seeds.

Description of root.—Burdock has a large, fleshy taproot (fig. 25), which, when dry, becomes scaly and wrinkled lengthwise and has a blackish brown or grayish brown color on the outside, hard, breaking with a short, somewhat fleshy fracture, and showing the yellowish wood with a whitish spongy center. Sometimes there is a small, white, silky tuft at the top of the root, which is formed by the remains of the bases of the leafstalks. The odor of the root is weak and unpleasant, the taste mucilaginous, sweetish, and somewhat bitter.

While the root is met with in commerce in its entire state, it is more frequently in broken pieces or in lengthwise slices, the edges of which are turned inward. The roots of other species of Arctium are also employed.

Collection, prices, and uses.—Burdock root is official, and the United States Pharmacopœia directs that it be collected from plants of the first year's growth, either of *Arctium lappa* or of other species of Arctium. As burdock has a rather large, fleshy root, it is difficult to dry and is apt to become moldy, and for this reason it is better to slice the root lengthwise, which will facilitate the drying process. The price ranges from 5 to 10 cents a pound. The best root is said to come from Belgium, where great care is exercised in its collection and curing.

Burdock root is used as an alterative in blood and skin diseases. The seeds and fresh leaves are also used medicinally to a limited extent.

PLATES.

EXPLANATION OF PLATES.

Plate I. Fig. 1.—Marginal-fruited shield-fern (*Dryopteris marginalis*), showing upper surface of leaf, the lower surface with the "sori," or "fruit dots," arranged on the margins, and the erect, chaffy rootstock. Fig. 2.—Skunk-cabbage (*Spathyema foetida*), showing flowering plant with thick rootstock and whorl of crowded roots; unfolded leaf and spathe laid open to show rounded spadix; also seedling, and transverse section of rootstock. Fig. 3.—Sweet-flag (*Acorus calamus*), showing swordlike leaves, flowering head produced from the side of the stalk, and long, creeping rootstock. Fig. 4.—Bethroot (*Trillium erectum*), showing leaves, various views of the flower, and root. Arrangement of the different parts of the plant is in threes.

Plate II. Fig. 1.—Chamaelirium (*Chamaelirium luteum*), showing the male plant. Note the arrangement of the long-stemmed leaves along the entire stem and the graceful spike of feathery flowers, as compared with the grasslike basal leaves and the erect flowering spikes of Aletris (fig. 2), with which it is often confused. The rootstock of Chamaelirium, with the slightly curved upward end, is also shown. Fig. 2.—Aletris (*Aletris farinosa*). Note the grasslike leaves at the base of the stem and the erect spikes of urn-shaped flowers, as compared with the arrangement of the leaves all along the stem and the drooping plumelike spikes of Chamaelirium (fig. 1), with which Aletris is frequently confused. The rootstock of Aletris, which is rough and scaly and almost completely hidden by the fibrous roots, is, unfortunately, not well shown in the illustration. Fig. 3.—Wild yam (*Dioscorea villosa*), showing part of the vine, with its drooping clusters of flowers and 3-winged seed capsules; also the long, horizontal rootstock. Fig. 4.—Blue flag (*Iris versicolor*), showing sword-shaped leaves, the flowers, and part of the rootstock.

Plate III. Fig. 1.—Large yellow lady's-slipper (*Cypripedium hirsutum*), showing plant with its broad, parallel-veined leaves, and curious, baglike flower, and also rootstock with wavy roots. Fig. 2.—Canada snakeroot (*Asarum canadense*), showing, to the right, the flowering plant, and to the left the fruiting plant, together with the creeping rootstocks. Fig. 3.—Virginia serpentaria (*Aristolochia serpentaria*), plant showing seed capsules and rootstock. Fig. 4.—Soapwort (*Saponaria officinalis*), showing the upper flowering portion and seed pods; also the runners and roots.

Plate IV. Fig. 1.—Oregon grape (*Berberis aquifolium*), showing a branch with the leathery, holly-like leaves, and clusters of berries. Fig. 2.—Blue cohosh (*Caulophyllum thalictroides*), showing upper portion of the plant, with flowering head. Fig. 3.—Canada moonseed (*Menispermum canadense*), showing a portion of the vine in flower. Fig. 4.—Hydrangea (*Hydrangea arborescens*), showing a flowering and fruiting branch.

Plate V. Fig. 1.—Indian-physic (*Porteranthus trifoliatus*), showing upper flowering portion, and base of stem with root. Fig. 2.—Wild sarsaparilla (*Aralia nudicaulis*), showing flowering plant with rootstock, and to the left a fruiting head. Fig. 3.—Ginseng (*Panax quinquefolium*), showing the upper portion in flower, and the root. Fig. 4.—Water-eryngo (*Eryngium yuccifolium*), showing the long, grasslike leaves, stout-stemmed flowering heads, and rootstock.

Plate VI. Fig. 1.—American angelica (*Angelica atropurpurea*), showing leaves, fruiting head, and to the right a portion of the stem with broad, expanded leafstalk. Fig. 2.—Pinkroot (*Spigelia marilandica*), showing flowering top and seed capsules. Fig. 3.—Pleurisy-root (*Asclepias tuberosa*), showing flowering top, pods with escaping hairy seeds, and root. Fig. 4.—Comfrey (*Symphytum officinale*), showing the thick, rough leaves, the clusters of flowers, lower portion of plant with root, and sections of root.

Plate VII. Fig. 1.—Stoneroot (*Collinsonia canadensis*), showing flowering top and base of stem with root. Fig. 2.—Queen-of-the-meadow (*Eupatorium purpureum*), showing leaves and flowers. Fig. 3.—Elecampane (*Inula helenium*), showing leaves, flowers, and root. Fig. 4.—Echinacea (*Brauneria angustifolia*), showing flowering plant.

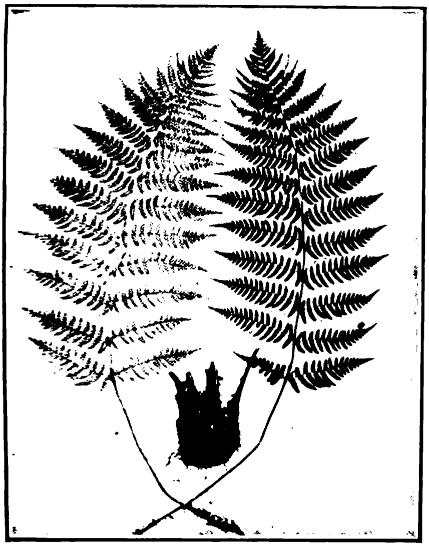

FIG. 1.—MARGINAL-FRUITED SHIELD-FERN (DRYOPTERIS MARGINALIS).

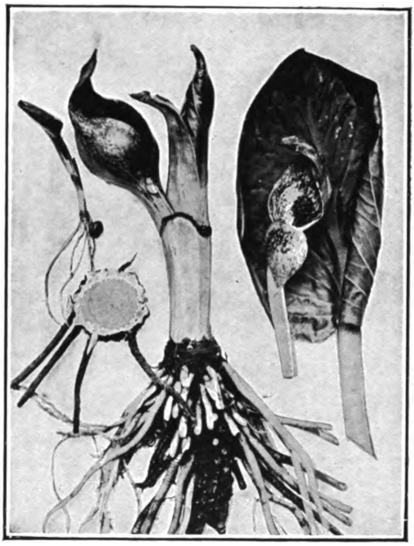

FIG. 2.—SKUNK-CABBAGE (SPATHYEMA FOETIDA).

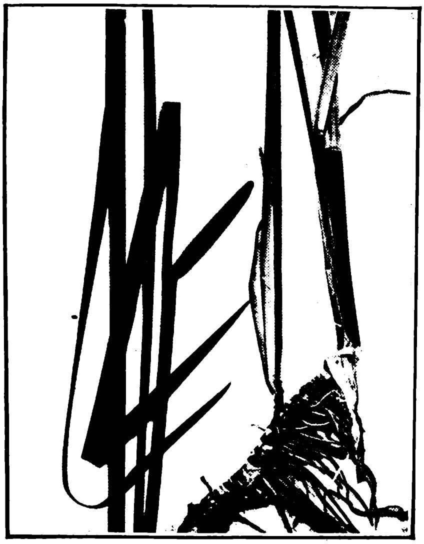

FIG. 3.—SWEET-FLAG (ACORUS CALAMUS).

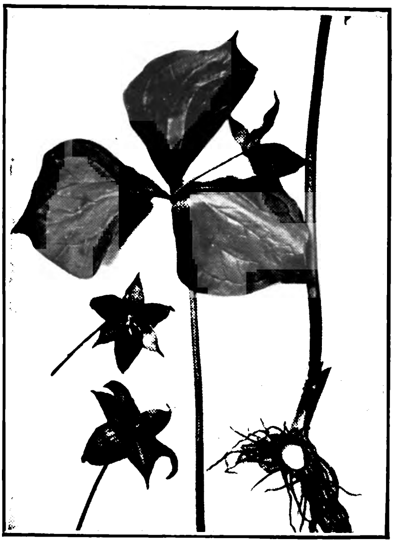

FIG. 4.—BETHROOT (TRILLIUM ERECTUM).

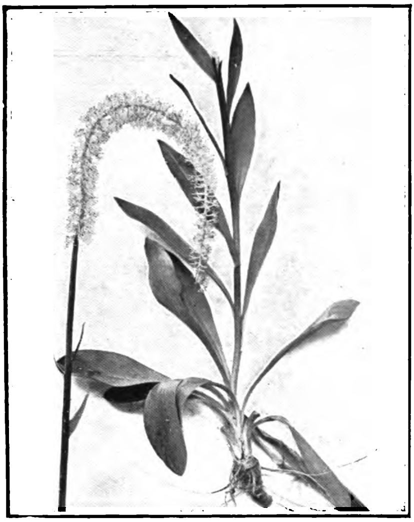

FIG. 1.—CHAMAELIRIUM (CHAMAELIRIUM LUTEUM).

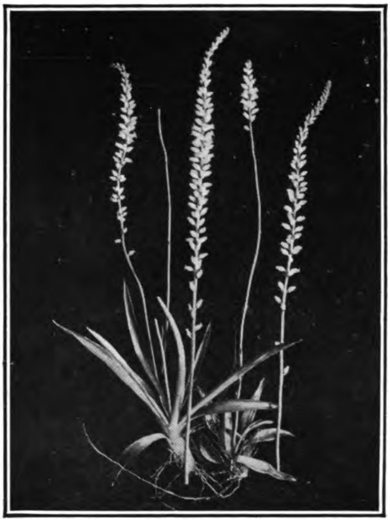

FIG. 2.—ALETRIS (ALETRIS FARINOSA).

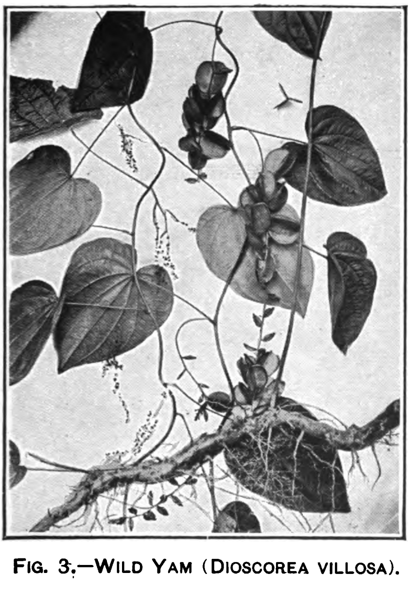

FIG. 3.—WILD YAM (DIOSCOREA VILLOSA).

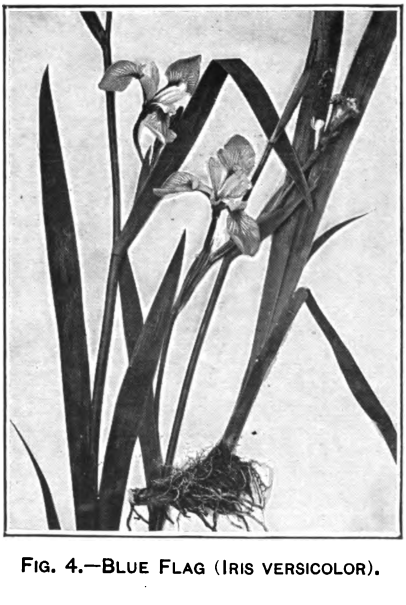

FIG. 4.—BLUE FLAG (IRIS VERSICOLOR).

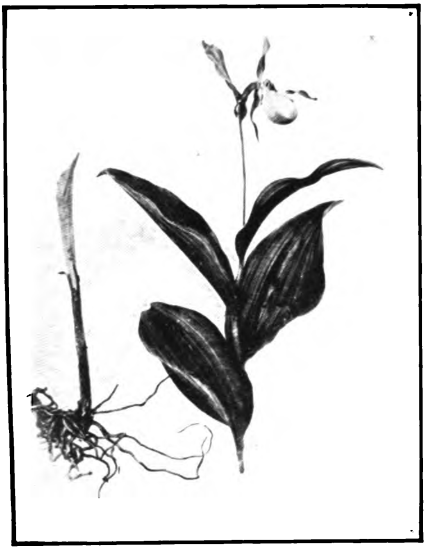

FIG. 1.—LARGE YELLOW LADY'S-SLIPPER (CYPRIPEDIUM HIRSUTUM).

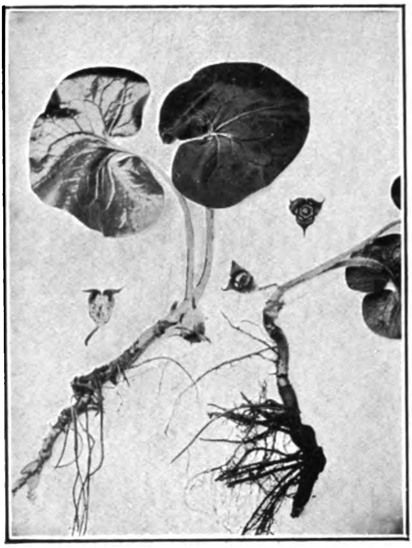

FIG. 2.—CANADA SNAKEROOT (ASARUM CANADENSE).

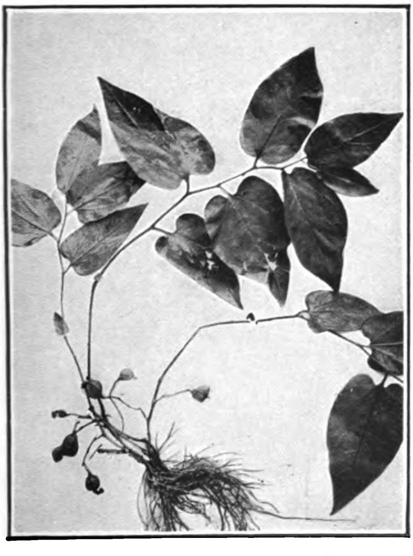

FIG. 3.—VIRGINIA SERPENTARIA (ARISTOLOCHIA SERPENTARIA).

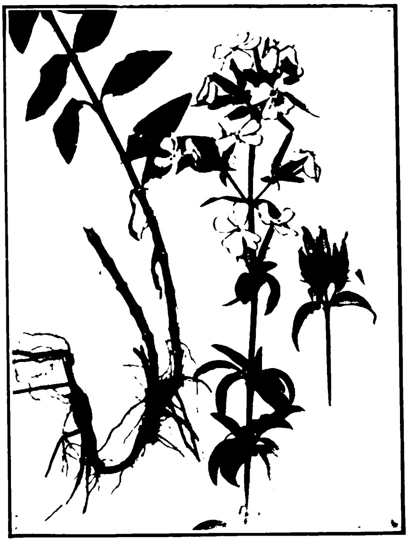

FIG. 4.—SOAPWORT (SAPONARIA OFFICINALIS).

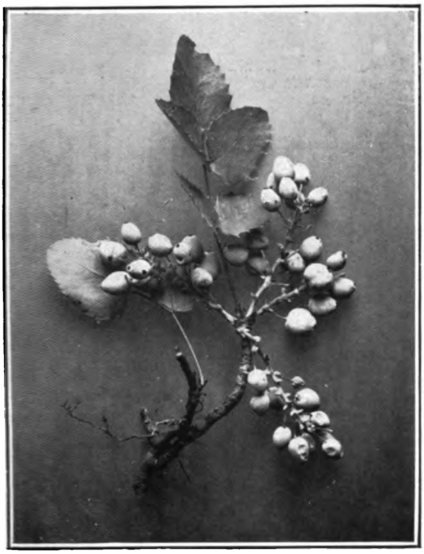

FIG. 1.—OREGON GRAPE (BERBERIS AQUIFOLIUM).

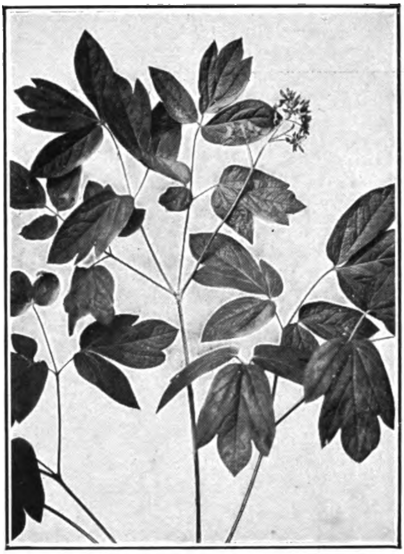

FIG. 2.—BLUE COHOSH (CAULOPHYLLUM THALICTROIDES).

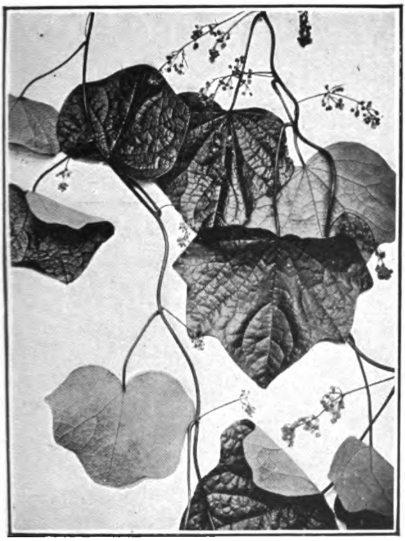

FIG. 3.—CANADA MOONSEED (MENISPERMUM CANADENSE).

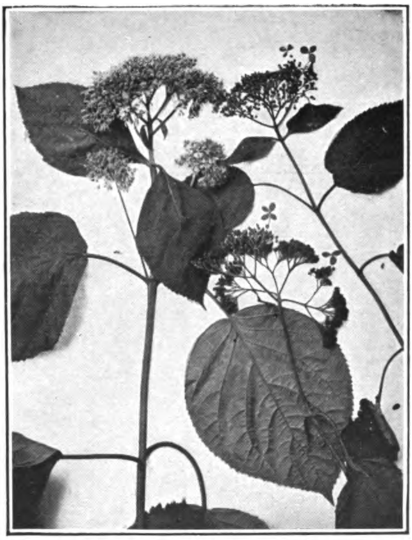

FIG. 4.—HYDRANGEA (HYDRANGEA ARBORESCENS).

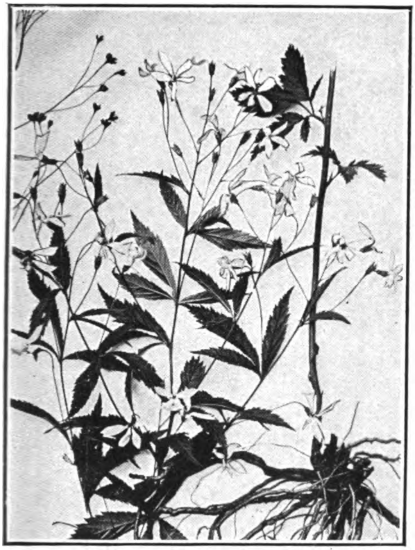

FIG. 1.—INDIAN-PHYSIC (PORTERANTHUS TRIFOLIATUS).

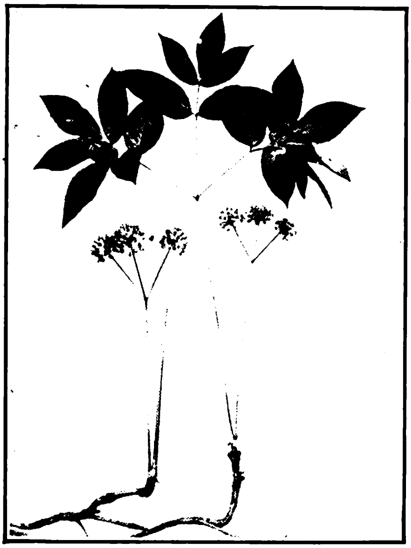

FIG. 2.—WILD SARSAPARILLA (ARALIA NUDICAULIS).

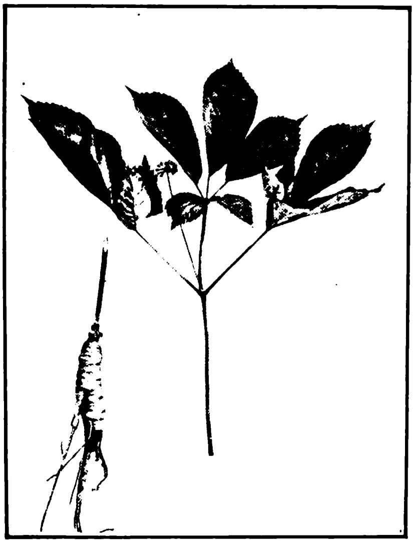

FIG. 3.—GINSENG (PANAX QUINQUEFOLIUM).

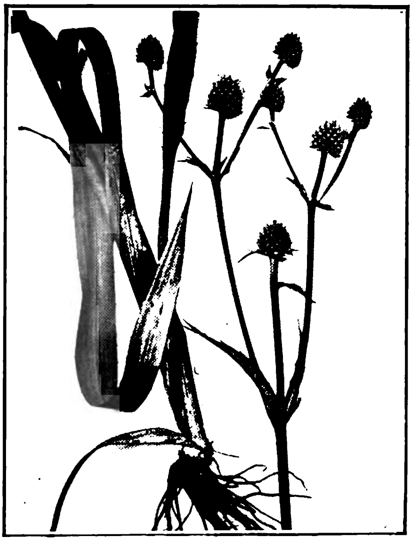

FIG. 4.—WATER-ERYNGO (ERYNGIUM YUCCIFOLIUM).

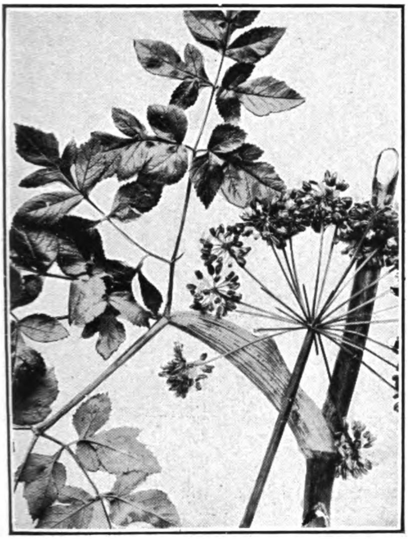

FIG. 1.—AMERICAN ANGELICA (ANGELICA ATROPURPUREA).

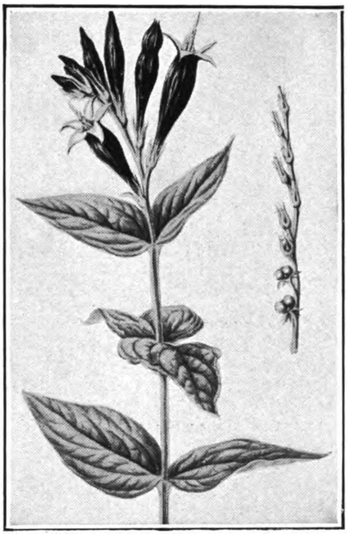

FIG. 2.—PINKROOT (SPIGELIA MARILANDICA).

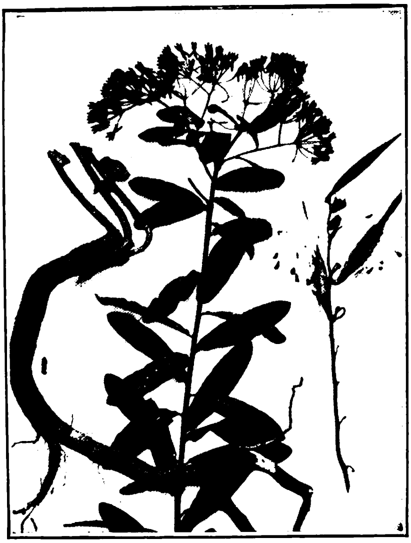

FIG. 3.—PLEURISY-ROOT (ASCLEPIAS TUBEROSA).

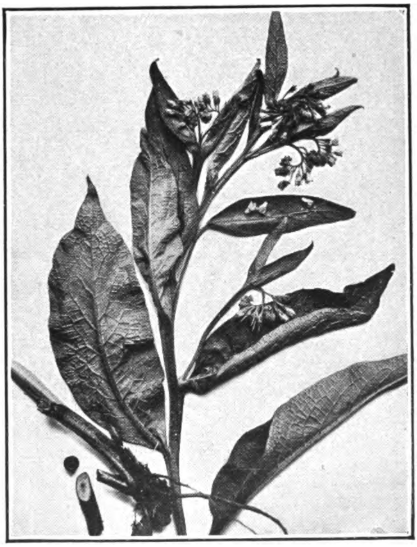

FIG. 4.—COMFREY (SYMPHYTUM OFFICINALE).

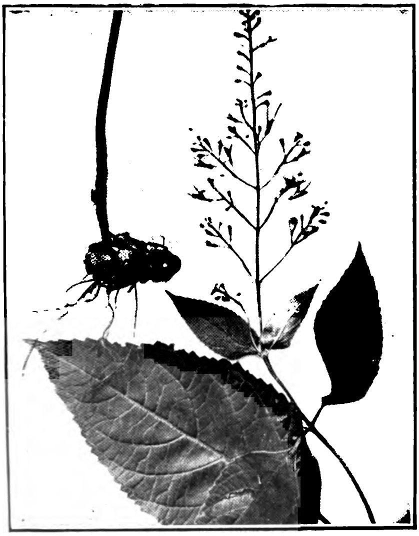

FIG. 1.—STONEROOT (COLLINSONIA CANADENSIS).

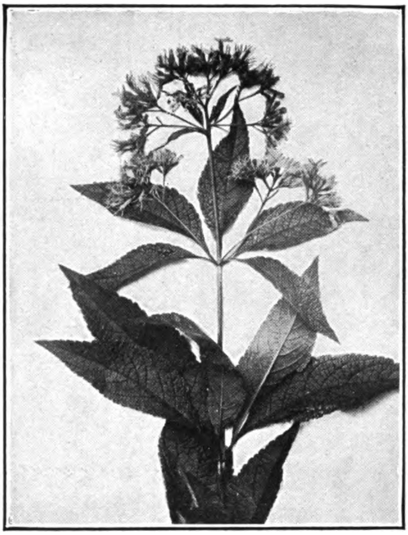

FIG. 2.—QUEEN-OF-THE-MEADOW (EUPATORIUM PURPUREUM).

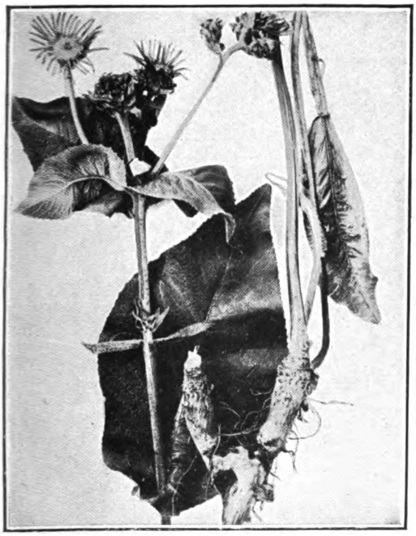

FIG. 3.—ELECAMPANE (INULA HELENIUM).

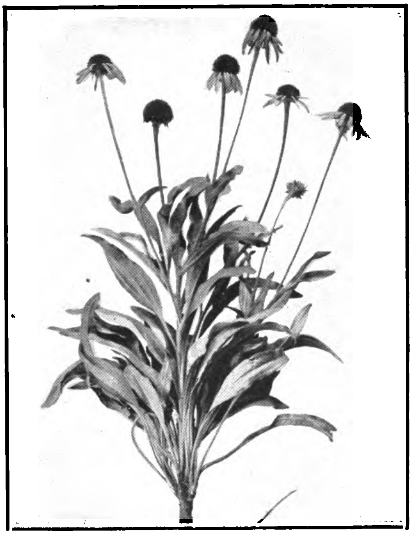

FIG. 4.—ECHINACEA (BRAUNERIA ANGUSTIFOLIA).

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